ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

NOVEMBER 10, 1949

Main span (800-ft.) is closed on Massachusetts' $27 million Mystic Bridge (see pg. 13)

CONCRETE COLUMNS PRESTRESSED

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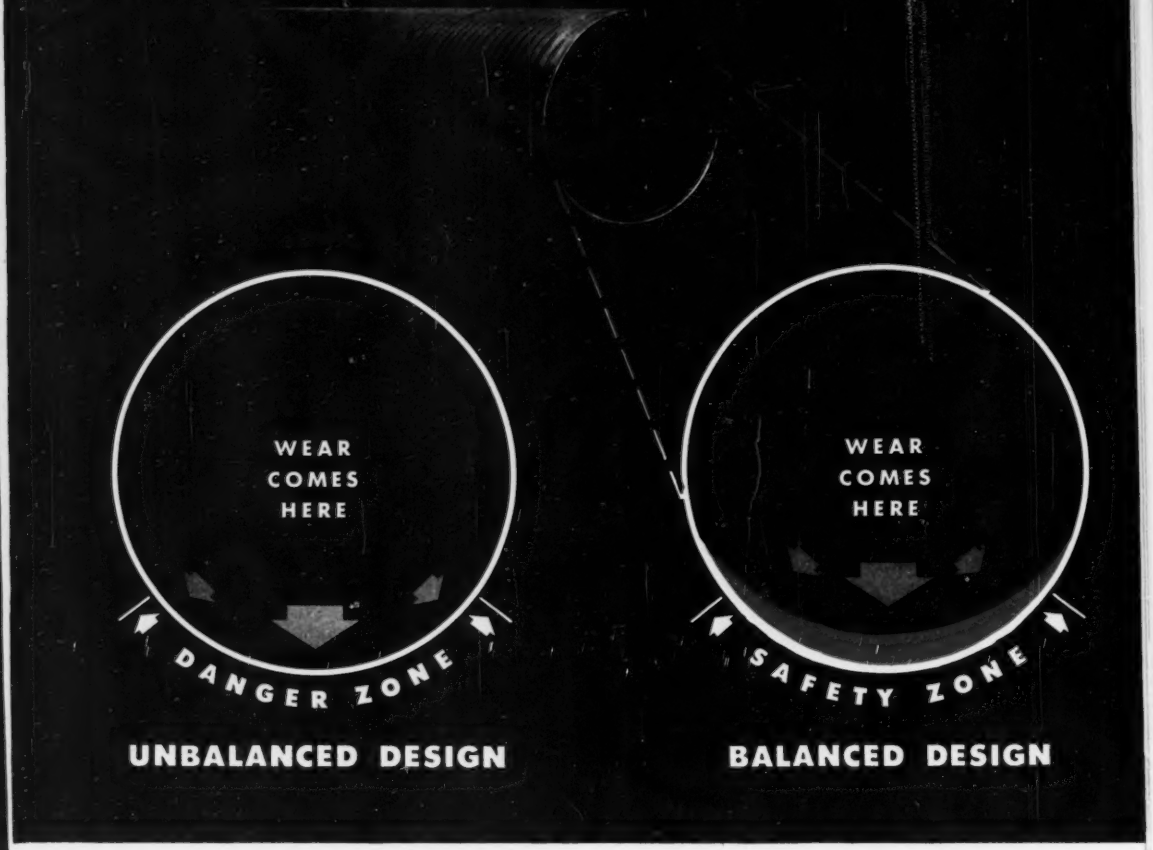

The pipe that was "rubbed the wrong way"

The rub came from erosion that wore out culvert bottoms and ruffled the feelings of engineers and officials because it hit them in the pocketbook. When they had to replace any type of culvert they generally found the upper three-fourths in good condition.

Then ARMCO Engineers smoothed things over by developing ARMCO PAVED-INVERT Pipe. This new pipe had a thick bituminous pavement in the invert for greater protection against erosion. Now the bottom lasts as long as the top—service life is up, maintenance down—and everybody's happy.

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BFG users report: Continued savings —thanks to double bruise protection

B. F. GOODRICH *Universals* were reported by one operator to be in good condition after daily quarry service for over 21 months. Another operator reports over 4500 service hours from Universals against only 1600 hours from another make in identical service. Still another report told of tires that were still "young" at 3200 hours and probably good for thousands more. These actual user reports spotlight the great difference between various makes of off-the-road tires.

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ENGINEERING NEWS-RECORD

VOLUME 143 NOVEMBER 10, 1949 NO. 19

WALDO G. BOWMAN
Editor

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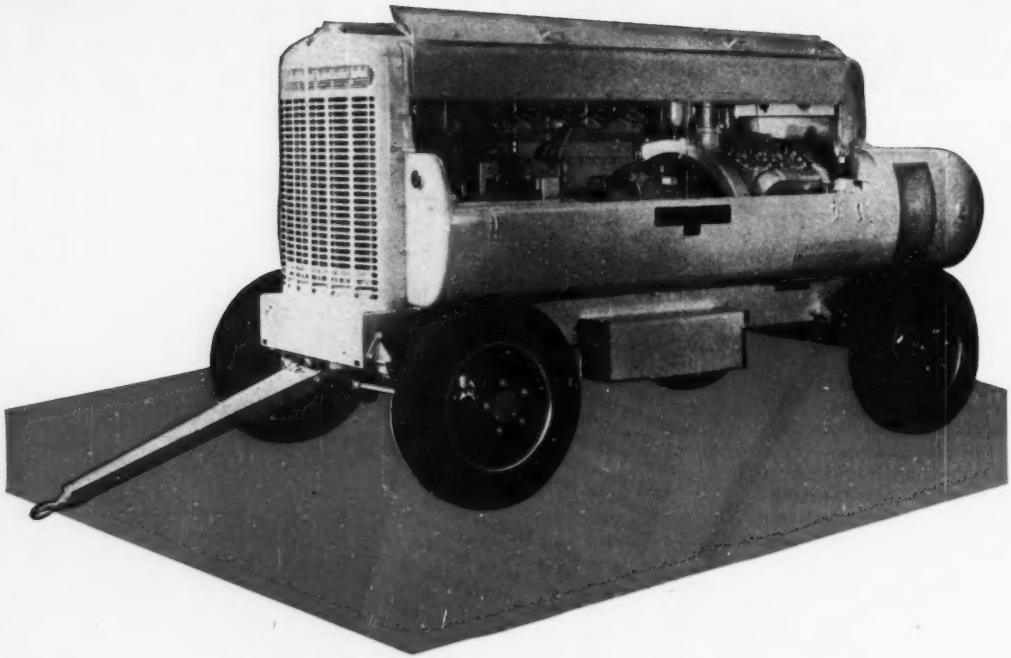

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NEWS BRIEFS

Bridge Delays Ended—Maryland State Roads Commission has awarded and executed contracts totalling $29,790,232 for construction of the Chesapeake Bay bridge. The action followed termination of a legal dispute aimed at enjoining the bridge until a tunnel could be studied. Baltimore Councilman Charles A. Massen, who had been refused an injunction and denied an appeal from the refusal, waived a rehearing. (See "Bridges," Construction Rpts. section, this issue.)

Fish Story—Pennsylvania is undertaking a survey of the effects upon fish of any toxic substances in industrial wastes. The State Health Department expects to learn the effects of various industrial wastes on streams and to establish abatement methods in some cases where treatment methods have not yet been established clearly.

Drill Another One—Residents of Grandview, Wash., sometimes are puzzled as to what's to be done with the output of the city's new water well—burn it or drink it. The water contains hydrogen sulphide, and there's pressure enough to kick the glass out of a housewife's hand when she opens a tap. City officials hope to harness the gas at the well.

Rocky Road for Turnpike—Pennsylvania and Ohio Turnpike Commissions meet early this month to plan connections between Ohio's proposed superhighway and Pennsylvania's western Turnpike extension. Ohio's commission is having trouble: A taxpayers' suit is planned to stop the project, and State Auditor Ferguson has refused to approve the use of $600,000 in highway funds—to be repaid by tolls—for a route survey. The attorney general has been asked for an opinion.

Efficiency in Government—Bidders on Reclamation Bureau work hereafter will use a bidding schedule which will be distributed by the Bureau. It's an idea submitted by William E. Wheeler, chief of the Bureau's general engineering section at Hungry Horse Dam, and it won Wheeler a commendatory certificate and a cash award. Another Hungry Horse employe hit the Interior Department's suggestion system jackpot with an award for a system of measuring and mixing automatically the

(Continued on page 10)

Announcing...

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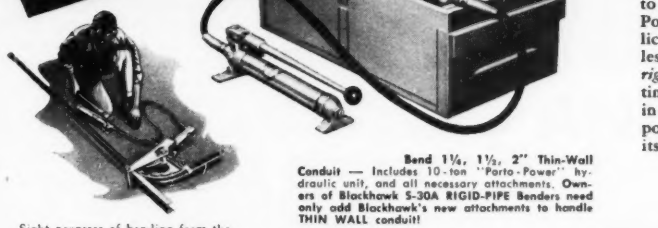
NEW! S-34 KIT



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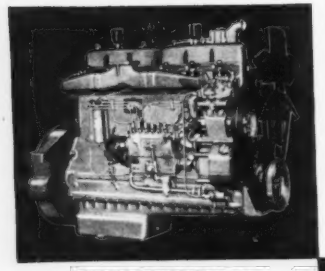

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(Continued from page 8)
fluid admixtures in concrete mixing plants. It uses a water jet.

Quantum Progress Needed—Western water needs may one day be met by distillation of sea water, Undersecretary Oscar L. Chapman of the interior department believes. Despite much progress from wartime research, distillation is still too expensive—at 55 cents to $1.50 per 1,000 gal., $180 to $490 per acre ft.—for ordinary use. Chapman says the problem is to develop distillation plants with 500 times the capacity and 50 times the efficiency of the largest units made today.

Mountains Do the Work—What the Navy claims will be the world's most powerful radio transmitter—to develop more than 1,000,000 watts—is to be built at Jim Creek, Snohomish County, Wash. The site was selected because natural contours of the valley, flanked by 2,000-ft. mountains, permit suspension of the antenna from one mountain top to the other by the erection of relatively short (200-ft.) towers which can withstand icing and high winds.

Correction—The Triboro Bridge and Tunnel Authority (New York City) said last week that it had awarded a contract for substructure and ramps for a new footbridge across the Harlem River to Peter F. Connolly Co. and Senior and Palmer, of New York, for $809,840. Low bidder when bids were opened was Grow Construction Co., Inc. (ENR Oct. 27, p. 31) at $838,000 but the award was made after "modifications and adjustments", TBTA officials said.

Who Doesn't?—Texas' Highway Department needs more money if it's to continue expanding its 39,000-mi. road system. That's the warning of several well-qualified observers. Commission Chairman Fred Wemple says maintenance costs are becoming so great that expansion is endangered. Highway Engineer D. C. Greer concurs, adding that the department has made ends meet so far by increasing efficiency.

Free-Bridge-Toll-Bridge Dilemma—Washington's highway department has completed a study to determine whether a toll bridge could feasibly be built across Lake Washington, east of Seattle. A report is expected about Jan. 1. Biggest problem: Could a toll bridge pay for itself while a free bridge exists across the lake, even if they're seven miles apart? Tolls were re-
(Continued on page 13)

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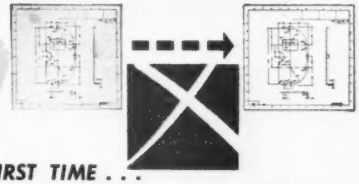

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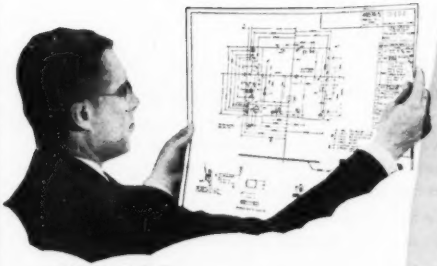

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Sager Construction Company, St. Louis, Mo., recently completed the contract to move 800,000 yards of overburden from this clay mine owned by Kentucky-Tennessee Clay Company, Mayfield, Kentucky.

"WE operated during all seasons of the year on this job, so we had to use petroleum products that would keep equipment rolling in spite of big temperature variations," says Troas Joiner, Superintendent of the Sager Construction Company. "Hot or cold, mud or dust, we've had top-notch performance from every unit with Gulf lubricants and fuels—and extra hours of trouble-free operation."

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GULF

(Continued from page 10)

moved last summer (ENR Aug. 11, p. 20) from the floating bridge which has connected Seattle with the rapidly growing residential area across Lake Washington. Now residents want a second bridge.

Contact Point for Iran—Individuals or contractors interested in any details regarding the seven-year reconstruction and development program now starting in Iran should get in touch with Overseas Consultants, Inc. The address: 51 E. 42nd Street, New York 17, N. Y.

Building a Better Milwaukee—Permanent improvements valued at $7,750,000 are projected for Milwaukee next year. New sewers, set tentatively at $3,700,000, would be the major item in the program. New garbage incinerators get another $500,000.

Big Business in Schools—New York City's school building program is behind enrollment increases, and present construction needs to remedy the deficiency total "well over" half a billion dollars. At least, that's what the Public Education Association claims. The group once again will support legislation at Albany designed to prevent a "serious crisis in school housing in the immediate future."

Experience at Work—R. J. Newell, a veteran of western land and water development, will represent the United States on a commission to develop an interstate compact for division of Yellowstone River waters. Newell retired last June 30 as a regional director for the Reclamation Bureau at Boise.

THE COVER

Working toward scheduled completion next spring, ironworkers last week had closed the 800 ft. main span of the $27,000,000 Mystic River Bridge, in the Charlestown section of Boston.

Starting nearly three years ago (ENR Feb. 6, 1947, vol. p. 182), the 11,700 ft. structure (measured from grade to grade) will eliminate one of Boston's worst traffic bottlenecks. Drawbridges now in use at the site sometimes cause tieups that back traffic into downtown Boston's narrow business streets. The new bridge will clear the river channel by 135 ft. It will contain 50,000 tons of steel and about 50,000 cu. yd. of concrete.

The American Bridge Co. is completing erection of the spans. J. E. Griener Co., Baltimore, Md., prepared construction plans for the Mystic River Bridge Authority. (U. S. Steel photo).

Koppers PRESSURE-CREOSOTED PILES

One of the World's Largest Grain Elevators, Port Albany, N. Y.

13 MILLION BUSHELS OF GRAIN! That's the enormous capacity of one of the world's largest single-unit grain elevators. A lot of grain . . . a lot of weight, too. And this gigantic grain elevator at Port Albany, N. Y. is supported by approximately 7,400 Pressure-Creosoted Foundation Piles. Proof, indeed, that timber piles easily carry heavy loads.

Permanent . . . Economical!

Koppers Pressure-Creosoted Timber Piles provide permanent, economical foundations. A thorough permeation of creosote protects them against termites and acid or alkaline soils; also, against fungi—the *sole* cause of decay. These piles are low in first cost—usually lower than other permanent pile materials. And, no small factor, they are ready to drive when received.

Koppers Piles are Branded!

For *your* protection, Koppers now burns its brand into every one of its pressure-creosoted piles; this brand is your assurance of quality. The Koppers Brand is placed 10 feet from the butt of each pile. You and your inspector can tell at a glance exactly what you are getting in preservative and retention.

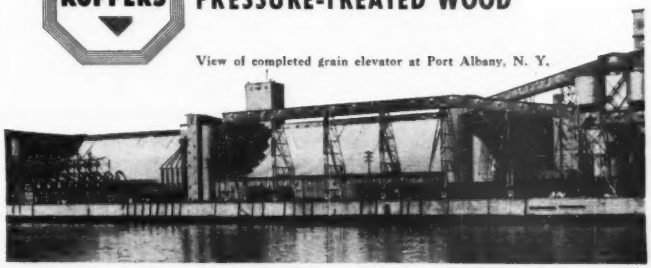
Prompt Deliveries!

Large stocks of Koppers Pressure-Creosoted Piles, in all needed sizes, are carried by Koppers. Prompt shipment can be made to any section of the United States from Koppers 22 Wood-Treating Plants. Get in touch with us for your pile requirements.

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

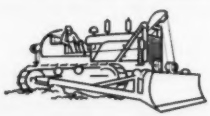
KOPPERS **PRESSURE-TREATED WOOD**

View of completed grain elevator at Port Albany, N. Y.



This TD-24, shown spreading its load on the crest of an earthfill dam, speeds up work cycles from cut to fill. It turns in new records for profitable payloads. No other crawler tractor can match it in work capacity.

CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS



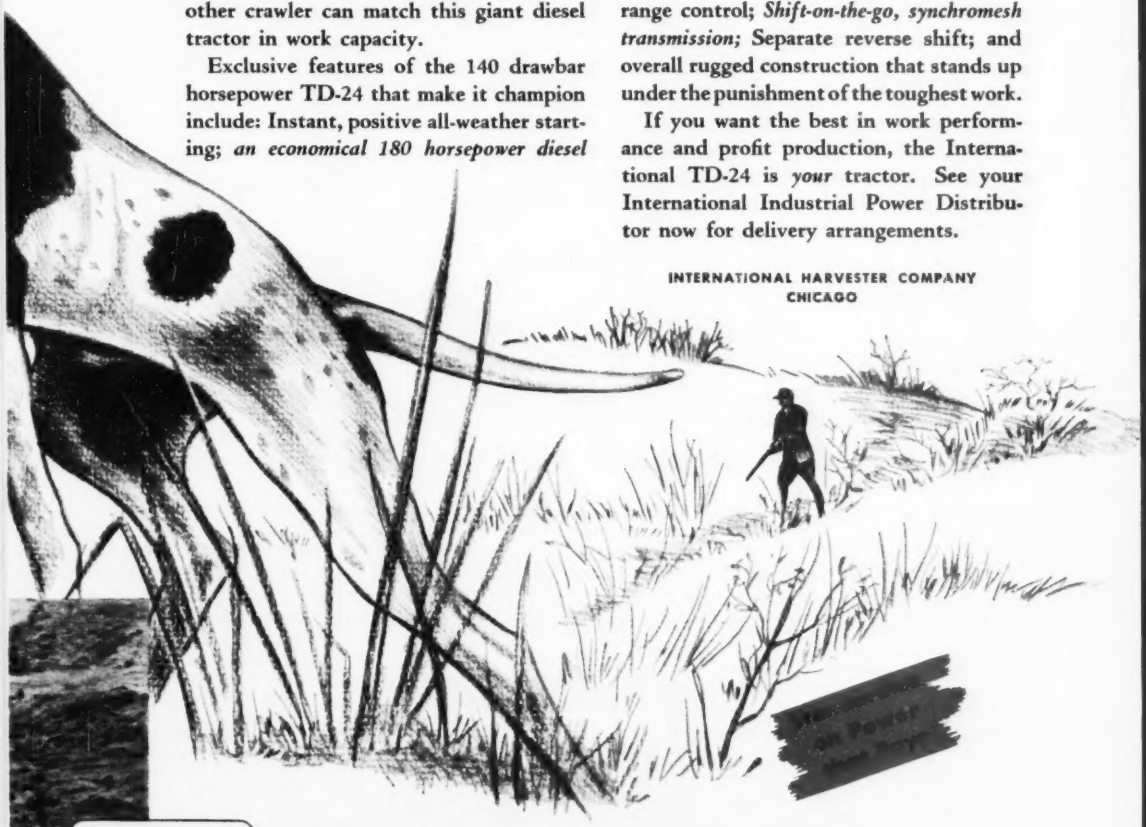
CHAMP

For a performance advantage that pays bigger profits, put the job-proved *champion* of all crawlers—the International TD-24—on your earthmoving jobs. No other crawler can match this giant diesel tractor in work capacity.

Exclusive features of the 140 drawbar horsepower TD-24 that make it champion include: Instant, positive all-weather starting; *an economical 180 horsepower diesel engine;* "Planet-power" steering which means greater drawbar pull on turns; *8 speeds forward and 8 in reverse with speeds to 7.8 m.p.h.;* Finger-tip high-low speed range control; *Shift-on-the-go, synchromesh transmission;* Separate reverse shift; and overall rugged construction that stands up under the punishment of the toughest work.

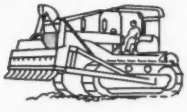
If you want the best in work performance and profit production, the International TD-24 is *your* tractor. See your International Industrial Power Distributor now for delivery arrangements.

INTERNATIONAL HARVESTER COMPANY
CHICAGO



INTERNATIONAL HARVESTER

INTERNATIONAL
INDUSTRIAL POWER



Hewitt Cement Placement Hose saves time and labor on cement jobs

Here's a rugged cement hose so light and flexible that it's truly *a one-man hose!*

It is Hewitt Cement Placement Hose.

Its tough, smooth gum rubber inner tube gives you extra resistance to abrasion. And its carcass of heavy plies gives you *added* hose strength. That's because each ply is bonded to a thick layer of pure gum rubber!

This makes the usual heavy outer cover unnecessary . . . reduces hose weight!

No wonder rugged Hewitt Cement Placement Hose is so widely used by engineers and contractors! They find it saves them time and money whether they're building cement mine reinforcements, tunnels, viaducts, or bridges and the like.

Remember, Hewitt Cement Placement Hose gives you longer hose life because of its extra strong wall with multiple-ply reinforcement. It also provides greater resistance to expansion because of the thick layer of pure gum rubber bonded to each ply.

Find out how Hewitt Hose can save time and labor on *your* construction jobs. See your Hewitt distributor. Or write Hewitt Rubber Division, 240 Kensington Ave., Buffalo 5, N.Y.

HEWITT

Cement Placement Hose

HEWITT RUBBER DIVISION
INDUSTRIAL HOSE • BELTING • PACKING

HEWITT-ROBINS PRODUCTS FOR YOUR EVERY REQUIREMENT

•

HEWITT RUBBER DIVISION

Water Hose • Steam Hose • Suction Hose • Air Hose • Cement Placement Hose • Dredge Sleeves • Fire Hose • Gasoline Hose • Oil Hose • Welding Hose • Conveyor Belting • Elevator Belting • Transmission Belting • Rotary Wire Brushes (Rubber mounted)

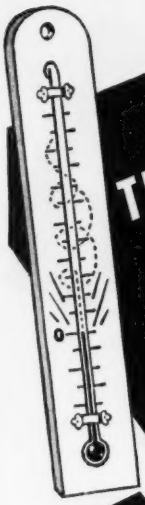
ROBINS CONVEYORS DIVISION

Screens • Screen Cloth • Idlers • Conveyors • Foundry Shakeouts • Car Shakeouts • Dewaterizers

ROBINS ENGINEERS DIVISION

Complete Bulk Materials-Handling Systems

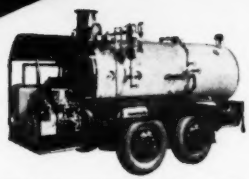
HEWITT-ROBINS HR **INCORPORATED**



TUMBLING TEMPERATURE TIME IS HERE!

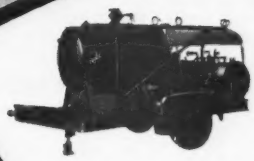
A partial check-list of Cleaver-Brooks equipment for cold weather construction and maintenance!

MOBILE STEAM PLANTS



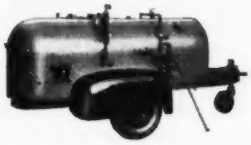
Completely self-contained; portable; highly efficient, fully automatic, code constructed, weather protected; available as skid mounted unit for your truck or trailer. Ideal for pile driving and extracting — 80 to 150 hp, oil or gas fired.

PORTABLE PUMPING BOOSTERS



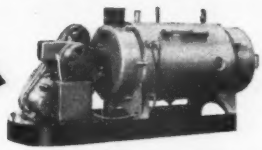
Heats bituminous material 4 times as fast; No. 1 booster — 10,000 gallon car 35° to 45° per hour, No. 2 booster — 10,000 gallon car, 55° to 60° per hour. Available as skid, two wheel or four wheel trailer mounted unit.

PORTABLE TANK CAR HEATERS



Fast steaming; 20 minutes from cold water start to 125 pounds steam pressure. Boiler feed pump, gas engine, oil burner, fuel and water tanks are all mounted on a single frame. 2 car heater — 28 hp; 3 car heater — 42 hp.

HOT WATER GENERATORS



A fast, instantaneous hot water producer requiring no storage tank up to rated output; fully automatic, code constructed, insulated. Two sizes — 665 gph, 100° F. rise and 875 gph, 100° F. rise.

Despite cold and wet weather, construction and maintenance work must go on.

Cleaver-Brooks equipment provides steam, heat, or hot water — fast, efficiently, and at low cost — for a wide range of cold weather needs such as —

- Steam for cleaning machinery, thawing frozen ground, culvert and catch basin thawing, operating steam hammers and pile driving, heating buildings and offices, and other uses.
- Heating and transferring asphalt, road oils, bituminous materials in tank cars and storage tanks.
- Thawing and heating aggregate in stock piles or bins for winter concreting.
- Heating water for central mixing plants, concrete block plants, or any large volume hot water needs.

Write for bulletins and complete information on the entire line of Cleaver-Brooks equipment for cold weather construction and maintenance.

Cleaver-Brooks

CLEAVER-BROOKS COMPANY
389 East Keefe Avenue
Milwaukee 12, Wisconsin

BUILDERS OF EQUIPMENT FOR THE GENERATION AND UTILIZATION OF HEAT.

You Don't Need to Keep your Fingers Crossed with Chlorination by W & T

The W&T Residual Chlorine Recorder gives better chlorination control in old plants as well as new.

Keeping fingers crossed over the dependability of chlorinating equipment is something that engineers who demand W&T Chlorinators can forget. They know they can forego the time honored symbol of hope-with-uncertainty and go on to other problems without worry or risk. Here's how they figure it.

W&T has a complete line of chlorinators and accessories for handling from ounces to tons of chlorine per day.

W&T has over 35 years' experience in solving all types of chlorination problems.

W&T has extensive research and development facilities to take on and solve new problems.

W&T has a large, precision machine shop which understands, from long experience, the exacting nature of chlorinator manufacturing.

W&T has a nationwide field staff to render service and technical assistance promptly and effectively.

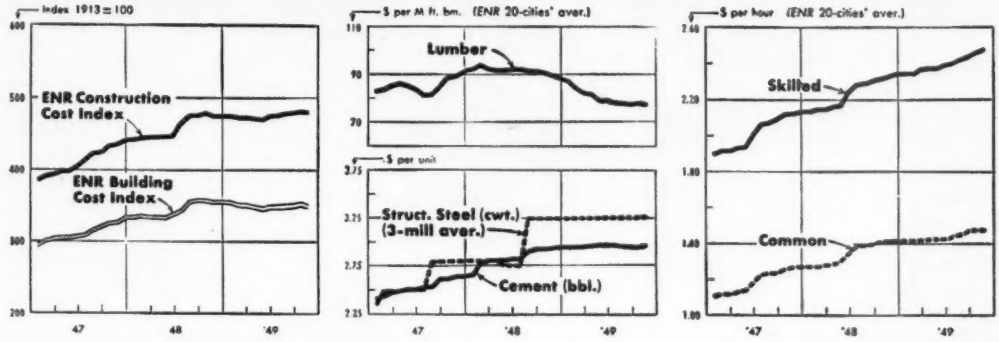
Thus, the engineers who say "W&T Chlorinators" know they have experience, dependability and sound theory behind their decision.

You'll find your W&T Representative willing and helpful on *your* chlorination problems, too. Why not call on him for your next job—instead of crossing your fingers?

WALLACE & TIERNAN
COMPANY, INC.
CHLORINE AND CHEMICAL CONTROL EQUIPMENT
NEWARK 1, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

S-45

NOVEMBER CONSTRUCTION BUSINESS REPORT

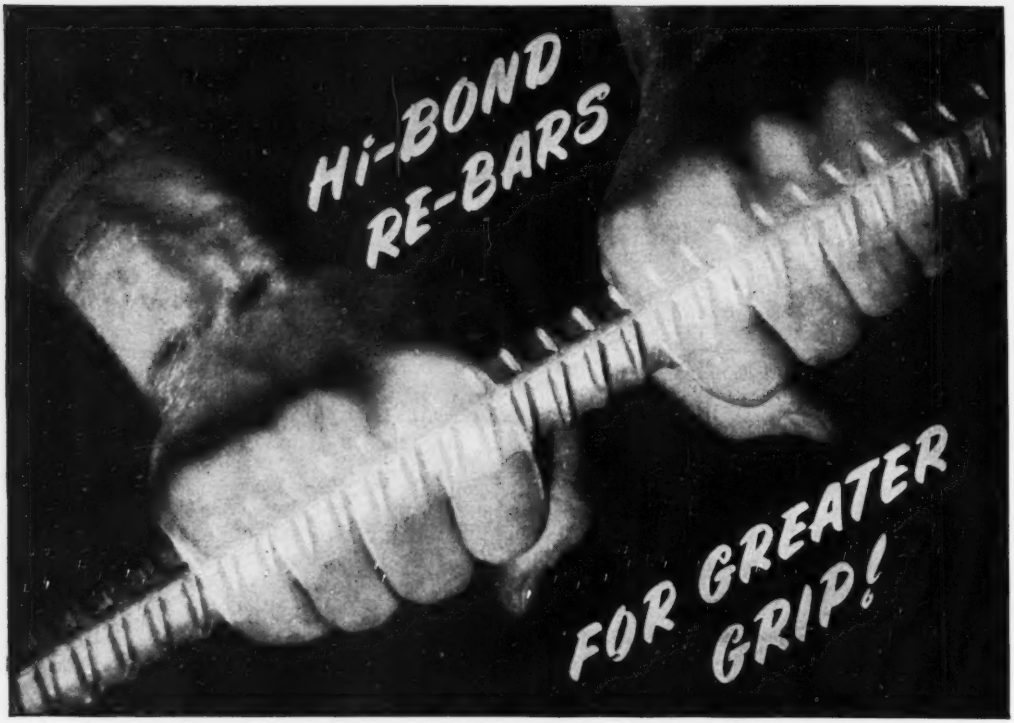


ENR INDEXES (1913 = 100)	Nov. '49	Oct. '19	% Change	Nov. '48	% Change
Construction Cost	480.02	480.54*	−0.1	478.25	+ 0.4
Building Cost	352.77	353.02*	−0.1	355.86	− 0.9
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl	2.950	2.945*	+0.2	2.950	0.0
Structural Steel, (3-mill aver.), per cwt	3.250	3.250	0.0	3.250	0.0
Sand, per ton	1.952	1.993	−2.1	1.977	− 1.3
Lumber, 2x4 Fir, per M ft. bm	84.897	85.838	−1.1	97.000	−12.5
Lumber, 2x4 Pine, M ft. bm	75.050	75.583*	−1.0	83.333	−10.0
Common brick, per M	27.763	27.763	0.0	27.338	+ 2.0
Ready-mixed concrete, per c. y.	10.337	10.279	+1.0	10.164	+ 2.0
Structural Clay Tile, 3x12x12 Per M	131.755	131.474	+0.2	127.935	+ 3.0
WAGE RATES (20-cities' average)					
Common	1.478	1.478	0.0	1.413	+ 5.0
Skilled (aver. 3 trades)	2.462	2.458*	+0.2	2.343	+ 5.1
Bricklayers	2.721	2.721	0.0	2.554	+ 7.0
Structural Ironworkers	2.426	2.420*	+0.2	2.322	+ 4.4
Carpenters	2.242	2.236	+0.3	2.177	+ 3.0

	October			Ten Months		
	1949 (4-weeks)	1948 (4-weeks)	% Change†	1949 (43-weeks)	1948 (44-weeks)	% Change†
CONTRACTS AWARDED (thous.)						
Total U. S. (ENR reported)	$553,482	$648,434	− 15	$6,724,618	$5,924,731	+16
Private	280,662	347,593	− 19	3,189,578	2,867,104	+14
Public	272,820	300,841	− 9	3,535,040	3,057,627	+18
Federal	47,378	67,878	− 30	873,014	825,290	+ 8
ENR Constr. Volume Index, '13 = 100	248	291	− 15	282	254	+11
NEW CONSTRUCTION CAPITAL						
Total	1,636,885	336,014	+387	6,617,873	5,416,201	+25
State & Municipal Bond Sales	348,476	111,895	+211	2,509,940	1,540,482	+67
Corporate Security Sales	161,962	224,119	− 28	1,974,709	1,824,498	+11
Federal (non-federal work)	.....	.....	.....	385,000	492,289	−22
Federal (federal work)	1,126,447	.....	.....	1,748,224	1,558,932	+12

MATERIAL SHIPMENTS & LABOR SUPPLY	September (S) August (A) 1949	1948	% Change	Nine Months (9) Eight Months (8) 1949	1948	% Change
Cement, thous. bbls., Bu. of Mines	23,633(A)	20,705(A)	+14	133,254(8)	133,216(8)	+ .03
Fabr. Struc. Steel, thous. tons, AISC	151(S)	175(S)	−14	1,486(9)	1,477(9)	+ 0.6
Lumber, mil. ft. bm., NLMA	2,901(A)	3,375(A)	−14	19,934(8)	24,138(8)	−17
Lumber Prod., mil. ft. bm., NLMA	2,938(A)	3,614(A)	−19	20,420(8)	24,656(8)	−17
Contract Const. Employ., thous. BLS	2,315(S)	2,369(S)	− 2	(Av.) 483(9)	(Av.) 481(9)	− 0.4

*Revised. †Computed on weekly average basis.



HI-BOND Reinforcing Bars— Shipped Quickly from Ryerson!

Need reinforcing steel? Why not get the best? Large stocks of reinforcing bars and wire mesh await your call at Ryerson plants from coast-to-coast. And Ryerson service to contractors and builders from Chicago, Milwaukee, Detroit, Cincinnati and Los Angeles features quick shipment of the scientifically designed Hi-Bond reinforcing bar.

The patented, test-proven Hi-Bond rib pattern has many important advantages.* The greater grip of these outstanding bars—their greater resistance to slip—provides architects and engineers with an extra margin of safety. Requiring less tying because of superior interlocking qualities, Hi-Bond minimizes erection costs for contractors.

Ryerson reinforcing service includes everything from lump sum or pound price estimate to final delivery. Your bars are cut, bent and correctly tagged for easy placement, and day-to-day requirements are delivered exactly as needed. For construction steels—carbon, stainless or alloy steels of any kind, shape or size—call the nearest Ryerson plant.

**Meets new ASTM tentative specifications, A 305-47 T, for deformations of reinforcing bars.*

PRINCIPAL PRODUCTS

BARS—Carbon & Alloy, Hot Rolled & Cold Finished, Stainless, etc.
STRUCTURALS—I Beams, H Beams, Channels, Angles, Tees, etc.
PLATES—Including Inland 4-Way Floor Plate
CHAIN, Wire, Wire Rope, etc.
SHEETS—Including Allegheny Stainless
TUBING—Seamless & Welded Mechanical & Boiler Tubes
REINFORCING STEEL—Bars, Spirals, Expanded Metal, etc.
STEEL FORMS—for Concrete Joist Construction

JOSEPH T. RYERSON & SON, INC. PLANTS: NEW YORK, BOSTON, PHILADELPHIA, DETROIT, CINCINNATI, CLEVELAND, PITTSBURGH, BUFFALO, CHICAGO, MILWAUKEE, ST. LOUIS, LOS ANGELES, SAN FRANCISCO

RYERSON STEEL

THE CONSTRUCTION WEEK

HOW MUCH IS FIVE PERCENT?—Last summer's Congressional furore over five percenters in Washington is bearing some fruit. General Services Administrator Jess Larson is amending government contracts to require contractors to tell whether they retained anyone to help obtain the business. If the answer is yes, contractors will have to identify their agents and specify the amount of the payment. Where the government (Larson) considers the fee normal, there's no penalty—other than publicity. If the fee seems out of line, Larson intends to rule that it should be deducted from the government's price. Other changes resulting from the probe: Larson is staffing regional offices with purchasing experts who'll be under orders to get federal contract specifications to potential bidders (particularly small businessmen)in time for them to compete. And a regional director will be allowed to buy on his own anything for which he is quoted a carload price. Thus, in effect, Larson is saying that to the government, the carload price is the lowest price.

STRIPPING SETTLEMENT—That agreement between the carpenters and laborers over stripping of concrete forms which was a keystone in the re-establishment of construction disputes machinery (ENR Oct. 20, p. 23) included three clauses. The first two provide, as stated, that carpenters will strip forms to be re-used; that moving of such forms, stripping of forms not for re-use, and stripping of forms for flat arch work, will be the province of the laborers. The third point, though, is the key: It prohibits any stoppage of work over the question; provides that such disputes go to the parent international unions for adjustments and if they can't settle it, thence to the national board for final adjustment.

WHOSE TRANSPORT?—Washington is waiting for a report from the Department of Commerce which it confidently expects will trigger a bureaucratic squabble over administration of the nation's transportation programs. Due at the White House Dec. 1, the report (by Presidential order) isn't intended to draw conclusions—its purpose is to show whether there's consistency of policy among the various agencies having to do with transportation. Embarrassing thing is the probability that the report cannot help but show up waste and overlap—exactly as was charged by the Hoover commission. Behind the current action is the fact that Truman is sold on Hoover's recommendations: That there be established a "unified and coordinated federal program for transportation." Briefly, the Hoover group recommended: All major non-regulatory transport operations be grouped under Commerce; transfer of all business operations of the Maritime Commission to Commerce; transfer of motor carrier safety functions to the Public Roads Administration; consolidate aviation regulation and research to Commerce. Such moves, of course, would step on the toes of a dozen agencies and doubtless send them off complaining to Congress.

BUSINESS OUTLOOK? OFF A LITTLE—Agriculture Department agents, gathered in Washington for an annual "outlook" conference, ventured some predictions as to 1950's business outlook. In general, they see business about as good in the first half as it is now, perhaps a little better; in the last half, they see it shading off a bit. Specifically, they figure employment in the first half might be up a shade from the current 60 million level, probably down a bit in the last half. Unemployment they see higher throughout the year—the labor force is growing. Industrial production: higher in the first half, sliding in the second to about last September's level. Commodity prices, in BLS index figures, they predict will average 148 in the first half, 143 in the last. Latest figure is 153.

ACREAGE LIMITATION HOLDS—A Congress-approved measure that would have lifted the 160-acre federal reclamation limitation on one irrigation project in Colorado—and might thus prove an opening wedge for other opponents of the ruling (notably California's Downey) died quietly under Presidential veto. Reclamation law allows 160 acres of land to a single landowner, 320 acres to husband-wife. The new bill would have raised the totals to 480 and 960 acres in Colorado's San Luis Valley. Truman said no—but held the door open a crack with a memorandum calling on Congress to set up standard machinery for lifting the 160-acre minimum where necessary on a "sound national public policy basis."

AFGHAN POWER—A loan of about $15,000,000 of Export-Import Bank funds for Afghanistan is now in the final negotiating stages in Washington. The money would go for irrigation works and limited hydro power production along the Helmand River.

CONCRETING 84 FLOORS IN 65 WORKING DAYS

Miracle? No—It's KNOW-HOW!

CONCRETING better than a floor a day, it took just 65 working days to erect superstructures of the ten units, 7 and 8 stories high, for Eastchester Houses—New York City Housing Authority's 874-apartment project, 950,000 sq. ft. floor area, in the Bronx.

Miracle? No . . . *Know-How!* Dividing the job into its components and dovetailing them into a cycle, trained crews erect and strip column, beam and slab forms, set reinforcing, place and finish concrete. Nobody in anybody's way, each crew progressing cycle to cycle.

Line production that gets utmost economy out of 'Incor' 24-Hour Cement . . . a minimum of forms kept almost constantly in motion . . . dependable 'Incor'* high early strength to get you back on the cycle quicker, when delays occur.

High-efficiency operation like this keeps construction abreast, in values delivered, with any other industry in America, bar none!

*Reg. U. S. Pat. Off.

TIMETABLE OF ONE UNIT AT EASTCHESTER

A crew assembles column forms, then moves to next building.

Next crew erects beam forms—each crew trained in its own job.

Placing slab forms and layout for mechanical trades.

Setting reinforcing steel and installing pipe work.

Concreting second floor—other crews on respective cycles.

Concreting roof (9th floor)—84 floors in 65 working days!

NEW YORK CITY HOUSING AUTHORITY: EASTCHESTER HOUSES, Bronx, N. Y.
Architects: **HARRISON & ABRAMOVITZ**
Engineers: **SEELYE, STEVENSON & VALUE**
Ready Mix 'Incor' Concrete: **COLONIAL SAND & STONE CO.,** Inc.
General Contractor: **CORBETTA CONSTRUCTION CO., INC.**
all of New York City

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ALBANY • BETHLEHEM, PA. • BIRMINGHAM • BOSTON
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 27,000,000 BARRELS ANNUAL CAPACITY

Field Trips Pay Off

EMPLOYERS OF ENGINEERS everywhere should be able to profit through adoption of a personnel policy of the Hydro-Electric Power Commission of Ontario. In its Toronto headquarters the commission has a staff doing engineering, design and drafting on major hydroelectric projects—the nearest of which is over 250 miles away. Yet, every executive, engineer, draftsman and stenographer in the Toronto office has been given a look at the field operation at one or more of these projects.

Take the Des Joachims project on the Ottawa River as an example. All of the 40 men who are at work on the design and drafting for this project in the home office have visited the site at least once. Two- and three-day, expense-free circuits of this and the other developments are regular for project design engineers.

Meanwhile, whole busloads of office personnel are being taken to the Des Joachims project for an overnight stop. After a guided tour there, they move on to one of the other jobs on the Ottawa River.

In contrast to this, consider the innumerable office engineers working for private consultants and public works agencies who never see their job at all—except at ¼-in. scale on their drawing boards. Consider how many of these office men, though skilled and capable, are lacking in field experience, largely ignorant of field problems and field methods.

Acquainting design staffs with their projects by firsthand inspection has become a set policy of the Hydro Commission. It has paid off. Experience has proved its worth as a morale and efficiency builder. Cost, though considerable with staff and distances so large, is held to be dollars well spent.

Simpler Grading of Members

SIMPLIFICATION of their membership structure has been proposed to the Founder Societies by the Engineers' Council for Professional Development. The present corporate grade of Associate Member would be eliminated and requirements for admission to the new grade of Member are to be set at substantially those specified for registration as a professional engineer in the model registration law.

A change of this kind has been needed for a long time. In the early days of societies such as the American Society of Civil Engineers there was much to be said in favor of having higher grades of membership to which the younger engineers could aspire. But in that society and the other Founder Societies the distinction between the grades of Member and Associate Member has come to have less and less significance in recent years. And with the widespread adoption of registration for engineers, an absurd situation developed under which the societies did not accord full standing to men whose competence had been certified by a state registration board.

Under the new set-up there will be but three principal grades: Student Member, for the young aspirant in the engineering school; Associate Member, for the graduate engineer gaining the practical experience required for registration and for full membership in the engineering society of his chosen field; and Member, for the man who has attained full standing.

An optional grade of Fellow is included in the ECPD proposal for use in societies that wish to maintain a grade of distinction to which admission will only be by election. And there also is an optional grade of Affiliate, which will permit men outside the engineering profession to participate in some of the activities of the societies that see a need for such a grade.

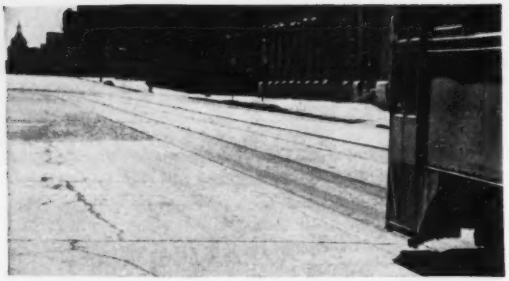
It is to be hoped that the societies to which this proposal has been made will adopt it quickly. Basically, these engineering societies are service organizations designed to promote improvements in engineering practices and to spread knowledge of those improvements. Time and money spent in the current involved procedure of advancing members from one grade to another contributes nothing to those objectives.

Why Prestress Concrete Columns?

TO SOME ENGINEERS, prestressing of concrete compression members may appear to be a questionable application of this process. The purpose of prestressing generally is to prevent tension from occurring in the concrete. It is accomplished by applying external forces to a member before it is loaded to induce compressive stresses that will counteract future tensile stresses (ENR Sept. 1, p. 183). Hence, at first glance, it may not seem sensible to superimpose compressive stresses on a column, as was done for the English mill described elsewhere in this issue.

A little study of this particular case, however, leads to the conclusion that under some circumstances prestressing columns may be economical, especially when it is important to save steel. Some examples are: (1). When columns are subjected to eccentric loads, such as from cranes. (2). When columns are precast and subject to handling and erection bending stresses. (3). When columns are long and might buckle under load.

Of course, if columns are prestressed, much more concrete is needed than if the usual U. S. practice is followed of using steel bars to share the load with the concrete. However, when steel costs are high in comparison to concrete, or when steel is scarce, prestressing of columns may be justified.



Ten Years Ago...

A blend of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today... experience shows ATLAS DURAPLASTIC* does make more durable concrete

Route 19, Washington County, Pa. Concrete for paving, bridges, underpasses made with Atlas Duraplastic cement. White concrete reflecting median divisors made with Atlas White Duraplastic. Designed by Pennsylvania Dept. of Highways. Contractor, Adam Eidemiller, Greensburg, Pa.

Modern highways, such as the one shown here, are a far cry from that first test roadway. By their increasing numbers, they attest to the fact that designers and builders of highways are convinced that Duraplastic *does* make more durable concrete, that it fortifies concrete against freezing and thawing—renders it highly resistant to the scaling action of de-icing salts.

Experience also shows that Duraplastic requires less mixing water for a given slump, that it makes concrete more plastic, more cohesive, more workable, more uniform; that it minimizes segregation and bleeding. And that concrete made with Duraplastic air-entraining cement dumps and screeds easily, permits finishing closer to paver, allows earlier protection for curing.

For pavement needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost.* It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications; sells at the same price as regular cement; and calls for no unusual changes in procedure. For further information write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, New York.

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ENR-D-96

ATLAS DURAPLASTIC TRADE MARK REG. U. S. PAT. OFF.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

NOVEMBER 10, 1949 VOL. 143 NO. 19

Steel strike, contract drop pose construction puzzle

Survey shows supplies for building jobs being used up rapidly, though little work held up at present—Contract awards reflect sharp drop

The heavy construction industry finds itself facing two disturbing developments:

1. A period of slowdown and struggle for materials until steel pipelines are refilled after the strike ends.

2. A distinct and puzzling slump in the value of contract awards which can't be tied directly to the strike.

The period of slowdown and struggle will become more aggravated the longer the steel industry stays down. As for the drop in contract awards, it rebounded the first week in November, but only under the impact of one huge job, (see page 30).

Here are the primary conclusions of an ENGINEERING NEWS-RECORD survey of 20 major cities, covering engineers, steel suppliers and builders:

1. There is virtually no holdup in calling for bids or letting of contracts because of the steel strike, but contingency clauses are becoming common in many contracts which are now being let.

2. There's surprisingly little slowdown in steel-consuming construction and even less outright stoppage. But most contractors can see the day coming—a month off in most cases—when work will stop if the strike lasts that long.

3. Almost no steel suppliers are allocating what they have on hand, i. e., giving all customers a stated proportion of their orders. A surprising number of suppliers are even serving new customers, as well as old.

4. Sheet steel, perhaps the hardest-to-get of any before the strike, will be the first to be exhausted. In some places it's already gone. Reinforcing steel, as might have been expected, will last longest, even though it's gone in a few places now.

There's much less agreement on other points covered by the ENR survey.

For instance, some contractors figure they'll be down in two weeks—say mid-November—if the strike doesn't stop promptly. But one figured he could keep going on steel-using jobs for nine months, provided he didn't take any new work. The variety of jobs on which respondent-contractors were engaged makes it hard for such estimates to mean much other than one thing:

Contractors haven't let the strike interfere with their work any more than absolutely necessary so far. But the decision won't remain in their hands long.

There's much more disparity in contractors' estimates of how long it will be until they can get back to work if their steel supplies are exhausted before the strike ends. Some figure on a three-week lapse, but more expect six weeks' delay. One figures it would take "four or five months."

How long do suppliers believe they can go on supporting construction? One says 10 days. One says five months. Two said "indefinitely." And suppliers were more pessimistic about how long it would take them to resume normal deliveries than were their contractor customers. Those who answered ranged from one week to five months. Sixty days was the most common answer which was given to this ENR question.

One of the primary reasons that day-by-day construction hasn't been hit harder than it has is the fact that the strike was about as well advertised as it could have been. Suppliers saw

(*Continued on page 26*)

Ok Upper Colorado Basin storage plan

Representatives of five Upper Colorado River Basin states have approved formally the billion-dollar water storage program for the stream and its tributaries worked out by the Reclamation Bureau. Approval of preliminary plans came at a joint meeting of the Colorado River Basin States Committee and the Upper Colorado River Commission at Salt Lake City.

The committee is composed of two representatives apiece and the commission of one representative from Utah, Colorado, Wyoming, New Mexico and Arizona. The latter is the official body set up by state agreement to administer the Upper Basin Compact, worked out after years or wrangling and finally ratified last spring.

Approved storage plans call for construction of nine reservoirs. These will provide 48,000,000 acre-ft. of capacity, of which 23,000,000 acre-ft. will be live storage, and 1,700,000 kw. of power capacity.

Approval was voted of:

Flaming Gorge Reservoir, Green River, Utah.

Echo Park Reservoir, Green River, Colorado.

Also approved were Gunnison River developments involving a combination of dams still under study—whichever Reclamation finds most feasible. Subject to several revisions, the proposed Glen Canyon project, on the main river, also was approved. This dam would be in Arizona, with most of its storage in Utah. It would provide most of the storage and almost half the power of the contemplated projects.

Its approval is subject to:

(1) Thorough study of its benefits and detriments to upper basin states.

(2) Allocation of costs between upper and lower basins, and allocation of evaporation losses.

The Glen Canyon report pointed out that the dam would have a large silt storage capacity.

Approval also was given the Martinez project, on New Mexico's San Juan River. This reservoir, with as much as 1,000,000 acre-ft. storage, would enable New Mexico to get its Colorado River water allotment.

These USBR principles were approved by the two bodies:

(1) Comprehensive storage development for upper basin states as a unit.

(2) Power revenues, including 3 percent interest, go into a special upper basin development fund to be used first for amortization of storage.

(3) Surplus from this fund goes to participating projects.

Three uniform grades for membership proposed to six engineering societies

Engineers' Council for Professional Development seeks simplification of standards—Reports made on reexamination of courses

Simplification of the member grading of the principal engineering societies of the U. S. and Canada was proposed by the Engineers Council for Professional Development at its annual meeting in Chicago, Oct. 28-29. The council also renewed its approval of the engineering courses taught in many engineering schools and added some new courses as a result of examinations continued actively during the past year. A few courses in technical institutes also were approved.

Establishment of three "essential grades" of membership with uniform requirements for each was recommended to six of the sponsoring societies. These are the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Institute of Chemical Engineers, and the Engineering Institute of Canada. The two other societies sponsoring the council do not grade their members. They are the American Society for Engineering Education and the National Council of State Boards of Engineering Examiners.

The three essential grades proposed are: Member, Associate Member and Student Member. They were defined as follows:

MEMBER—A member, at the time of his admission or advancement to that grade, shall:

> Be a graduate of an engineering curriculum approved by the governing board of the society concerned and shall in addition have had not less than four years of increasingly important engineering experience, indicative of growth in engineering competency and achievement and of a character satisfactory to that board, at least two years of which shall be in responsible charge of engineering work.
>
> Or, if not such a graduate, he shall have equivalent attainments including not less than ten years of increasingly important engineering experience, indicative of growth in engineering competency and achievement and of a character satisfactory to the governing board of the society concerned, at least two years of which shall be in responsible charge of engineering work.

ASSOCIATE MEMBER—An Associate Member, shall, at the time of his admission or advancement to that grade be:

> A graduate from an engineering curriculum approved by the governing board of the society concerned.
>
> Or, if not such a graduate, he shall have equivalent attainments, including at least six years of engineering experience of a character satisfactory to the governing board.

STUDENT MEMBER—A Student Member shall be:

> Registered in an undergraduate or a graduate engineering curriculum approved by the governing board of the engineering society concerned and shall be pursuing a course of study in preparation for the engineering profession.

Qualifications for optional grades of Fellow and Affiliate also were outlined by the council in its recommendations to the sponsoring societies.

The study of membership grades that resulted in these recommendations has been under way for two years by a committee headed by Ole Singstad, consulting engineer, New York. During the past summer, two conferences were held with representatives of the several societies, as a result of which, minor changes were made in the definitions as proposed by the Singstad committee last year (ENR Nov. 11, 1948, p. 73), and a set of interpretations of the definitions was included in the committee's recommendations, which were approved by the council at its Chicago meeting.

Similar to ASCE proposals

Requirements for the three essential grades are closely parallel to those made by the ASCE Committee on Membership Grades in 1948. These have been held in abeyance by the ASCE board pending the action just taken by ECPD.

At the Chicago meeting, representatives of the AIEE and ASME reported that the boards of those societies had already approved the ECPD proposals and were prepared to put them before their members for approval if other Founder Societies planned parallel action.

H. T. Heald, chairman of the Committee on Engineering Schools, reported that during the year, delegatory committees had visited 74 colleges and universities and had reinspected 250 curricula and had inspected 64 curricula not previously considered. This brings the total of new inspections and reinspections since the war to 110 new curricula and 375 reinspected curricula at 114 schools, leaving only 39 schools to be reinspected to bring the committee's work up to date.

Only 40 of the 64 new courses examined were approved by ECPD, and 7 of the previously approved courses were withdrawn from the list of approved courses as a result of the reinspection. Conditional approval was extended to 39 others.

Courses at four technical institutes were examined during the past year by representatives of the committee headed by H. P. Hammond. This brings the total of accredited curricula in technical institutes to 25. Eight additional schools have asked to be inspected.

Harry S. Rogers, president of the Polytechnic Institute of Brooklyn, was elected chairman of ECPD, succeeding James W. Parker, president of the Detroit Edison Co., and L. F. Grant, associate professor, Queen's University, Kingston, Ont., was elected vice chairman. C. E. Davies, secretary of the ASME, was elected secretary of ECPD for the coming year.

Construction puzzle

(Continued from page 25)

it coming, laid in whatever they could get before the shutdown hit them.

Doubtless this was a factor in the increase in steel's weekly production rate which took place in late summer. Still, there's less of a clear stockpiling pattern than might be expected. It isn't always so that suppliers farthest from the mills are in the best position. In some cases, they're better off than those close to steel-producing centers. But suppliers in one big steel city claim they can keep selling as long as four to five months.

Pacific Coast cities seem best off, perhaps because the Kaiser mills are not on strike. But Pittsburgh contractors expect to recover most rapidly. Large stocks there are tied up in steel company-owned warehouses, capable of being freed promptly.

In addition to the sheet, the items hardest to get seem to be wide-flange beams and steel windows. One contractor reports that some housing projects in a major city are having difficulty getting slag. But many large buildings dependent on structural shapes suffered less than might have been expected because all steel for them was ordered early in the game. One consultant ordered steel as soon as plans were ready, in anticipation of the strike, then sold it to the builder when the contract was let. There were a few cases reported of alternate specifications or design changes aimed at mitigating strike delays.

President addresses ASCE meet, urges greater vision in planning

Fall meeting in Washington features role of civil engineer in national and international development—All technical divisions participate

President Truman, in a surprise appearance before the fall meeting of the ASCE in Washington last week, told an audience of nearly a thousand his philosophy of planning—make plans big enough to take care of situations that cannot now be contemplated. He cited the prospect of having to serve a population of 300 million in the U. S. in less than a century.

It was the first appearance of a President before the society since Mr. Hoover's administration. The society last met in Washington 21 years ago. Last week's convention was characterized by meetings of all of the society's technical divisions, by the attendance of over 600 students from 34 different colleges and by numerous addresses stressing the role of civil engineers in national and international developments.

The president also touched on his "Point 4" proposal for aiding underdeveloped countries with America's technical aid and know-how. He did not reveal any more of the details of the plan than formerly, but he did add a facet to the objective. He foresees living standards abroad raised enough that foreign demand for our goods will assure our factories running full at all times. He mentioned a two percent rise in living standards, across the board, as being sufficient. The President also characterized Point 4 as a weapon exercised as a moral code by which, through beneficient aid, we can defeat countries that disregard such moral standards.

New publication scheme

Highlighting various actions taken by the Board of Direction in a meeting prior to the convention was adoption of a report by a special committee recommending a change in publication plans for technical proceedings. Instead of the monthly issue of proceedings, papers will be issued as separates available only on request from lists published monthly in Civil Engineering. Members will be entitled to 25 papers free. Additional ones must be paid for. The technical division of the society will occupy a key position in selections and editing of future papers. The scheme will not be put into effect for several months pending preparation of a manual of procedure by the Publications Committee.

The board approved increasing the number of West Coast directors from two to three and reducing the New York metropolitan area representation from four to three. It voted to hold three 1951 meetings—Houston in February, Louisville in June, and New York in October. The latter is a change from the previous practice of always holding the New York annual meeting in January.

Plans are underway for a great celebration in September, 1952, of a century of civil engineering progress. The board appropriated funds for a start on the hundredth anniversary meeting of the society which will be held in Chicago at that time.

The first change in the society's code of ethics in many years was approved by the addition of a new paragraph making it unethical for an engineer "to participate in competitive bidding on a price basis to secure a professional engagement."

Other developments from the Board of Direction meeting suggest that favorable action will probably be taken to adopt the standard membership grades adopted two weeks ago by E. C. P. D.; and that all-out efforts will be made to assure maintenance of the professional status of technical military personnel in any reorganization plan of the Defense Department.

The board took particular notice of the large increase in junior membership in the society. Already, 34 percent of the 27,000 total are juniors, and of the 1,700 applications received in the recent past, 1,400 have come from recent college graduates. This development was regarded by the board as healthy and at the same time imposing new responsibilities on the older members of the society.

A highlight of the convention was the smoker, which was given a singular significance by its joint sponsorship and handling by the Navy's Bureau of Yards and Docks and the Army's Corps of Engineers. This display of unity occurred at the Engineer Center at nearby Ft. Belvoir.

Total attendance at the convention exceeded 1500. Archie N. Carter, of the Associated General Contractors, was general chairman. Byron Bird, of the Corps of Engineers, Washington, D. C. district, is president of the host section.

Bigger roles, broader fields

Befitting a meeting in the national capital, the featured speakers discussed public affairs. All urged engineers to accept bigger roles, broaden their fields of interest.

An understanding of our international commitments is a must for engineers, said Senator George W. Malone, of Nevada, the only civil engineer in the Senate and a member of the society. "And if you agree with me," said the Senator, "your understanding will be that President Truman's commitments are pushing us into a type of government that none of you would vote for." Instead of

"picking up the check" for foreign countries, Senator Malone would condition our aid on their willingness to protect private investments and institue free convertibility of their currencies. He would turn our major attention away from Europe and toward the Far East.

Paul Wooton, of the Chilton Publications, in an analysis of the role of engineers in the federal government, urged engineering administrators for all engineering departments and divisions. Dwight W. Winkleman, contractor, Syracuse, N. Y. and co-chairman of the Joint Cooperative Committee ASCE-AGC, emphasized the important role that engineers and construction men must play in our national defense and pleaded for preservation of "free competitive enterprise" through use of the contract method for public works.

U. S. Grant III, of the National Capital Park and Planning Commission, paid tribute to the engineers who have contributed to Washington's development. The city's future, now that it has become a great and sprawling metropolis, is even more dependent upon engineering. General Grant proposed creation of a National Capital Metropolitan Works Agency patterned after the New York Port Authority, to develop highways, water supply and sewage disposal.

Many problems considered

The technical program of the meeting was crowded into one day of ten sessions, each sponsored by a technical division. Highlights:

Hydraulics—Changes in sediment loads of streams caused by the construction of dams may institute expenses that challenge the economic soundness of some river development schemes, said Carl B. Brown, of the Soil Conservation Service. Sediment brought in by tributaries downstream from dams may be too much for the regulated stream flow to handle. Deposited in channel plugs, it may accelerate floods, causing bank erosion and damage to bridges, levees and other river-side structures.

Power—The economic soundness of including hydro power at multi-purpose dams is tested by the Corps of Engineers by answering the question "Can the capacity and energy from hydro development be supplied to a power market as cheaply as the same capacity can be supplied by steam plants?" This statement by H. G. Roby, chief of the hydro power branch of the Corps, was challenged by Byron O. McCoy, of Chas. T. Main, Inc., Boston, who said economic justification should rest on comparing the combined hydro and steam system costs with an all-steam system rather than comparing the hydro plant with an equivalent steam plant, "since they are not equivalent." Mr. McCoy also charged that the federal methods for allocating costs on multi-purpose projects do not reveal the amount of subsidy going to uses that cannot stand on their own feet. These subsidies may be justified, but we should know their amount, McCoy said.

The controversial subject of uplift in dam design was introduced by Kenneth B. Keener, who described Bureau of Reclamation practices for taking it into account. Both A. V. Karpov, consulting engineer, Pittsburgh, and Gerard H. Matthes, consulting engineer, New York, expressed doubt as to the necessity or practicability of considering uplift. Many dams designed only for weight and hydrostatic pressure are still standing. Drain holes provided to relieve uplift clog up in time and probably won't be maintained. The committee on uplift, (Ross M. Riegel of TVA, chairman) met during the meeting to attempt to resolve the problem.

Waterways—Subsidence in the Long Beach-Terminal Island area in California, (9 ft. so far—as revealed in ENR June 16, p. 11, and p. 33, this issue) was reviewed by Lewis C. Coxe, Comdr., CEC, U. S. Navy, public works officer at the Long Beach Naval Shipyard. Commander Coxe urged that methods to stop or check the subsidence be given thorough consideration soon. He pointed out how, during a strike of oil refinery workers in September, 1948, production of oil was reduced approximately 20 percent. During this period there resulted a very decided reduction in the rate of subsidence within the Naval shipyard. This, he indicated, is worth further investigation as reduction in rate or production is considered a possible means of checking subsidence. Water repressuring of the oil sands is also being considered. The effectiveness of both these possibilities was, however, discounted by Robert R. Shoemaker, chief harbor engineer, Port of Long Beach.

The final plan for the Columbia River Basin, as prepared by the Corps of Engineers, is acceptable to all the states interested and is economically feasible, Col. William Whipple, Jr., district engineer of the Corps for the Walla Walla District, Washington, stated.

Colonel Whipple stressed the critical importance of flood control and power development. The latter alone would be economically feasible but more expensive than when provided by a multiple-purpose development. However, flood control and navigation are not feasible except in multiple-purpose developments. Ordinarily, flood control and power require separate storage. In the Columbia Basin, runoff prediction is the key to joint utilization of storage reservoirs.

Surveys and Maps—International cartography is assuming major importance as a result of the shrinkage of world distances. Our interest in the defense of many countries other than our own is also a factor affecting this importance, said Brig. Gen. Herbert B. Loper of the Department of Defense. What is being done to promote such mapping was cited by Robert H. Randall of the U. S. Budget Bureau as (1) cooperation among Western Hemisphere nations that has led to standardization of geodetic and mapping methods; and (2) moves within the U. N. to set up a cartographic office and to select a panel of mapping consultants.

Structural—That reconstruction of the White House is predicated upon truly dangerous conditions in the structure was amply demonstrated by W. E. Reynolds, commissioner, Pub-

(Continued on page 32)

HONORARY MEMBERS

The ASCE Board of Direction last week named five honorary members—highest individual honor within the gift of the society—for presentation at the annual meeting in New York in January.

Named were:

Charles B. Breed, railroad engineering specialist and consulting engineer of Boston, one of the nation's outstanding experts on grade-crossing elimination work, until 1944 head of M.I.T.'s civil engineering department;

William P. Creager, hydraulic engineer of Buffalo, N. Y., author and co-author of five engineering textbooks and contributor to many others, a pioneer in the development of soil mechanics;

Wilford W. DeBerard, sanitary engineer and now city engineer of Chicago, staff editor and western editor at Chicago to 1941 for ENGINEERING NEWS-RECORD;

Theodore von Karman, aerodynamicist of the California Institute of Technology, expert in aerodynamic analysis in the studies following the Tacoma Narrows bridge failure;

Wilbur M. Wilson, research profressor of structural engineering at the University of Illinois, a major contributor to engineering knowledge through his research into many fields, notably the fatigue strength of riveted and welded structural members.

Study atomic wastes, waterworks men urged

Waterworks men should use published data to learn about radio-active wastes' effect on water supply. This was the essence of a paper by Ray L. Derby, principal sanitary engineer, Los Angeles Department of Water and Power, presented at the 30th annual conference, California Section, American Water Works Assn., at Riverside. More and more radio-active isotopes are being used in industrial and medical processes and in research. Thus, Derby concluded, there is increasing possibility of radio-active wastes entering water supplies.

Since almost all water contains some radio activity, Derby suggested the basic radio activity of water be determined so abnormal situations can be detected readily.

Water softening report

Polystyrene resins appear to be preferable to synthetic siliceous zeolites for softening Colorado River water, according to a research program conducted at the softening plant of the Metropolitan Water District of Southern California, the world's largest. Lee Streicher, chief chemist, in a joint paper on this research, revealed that so far, the life of the polystyrene resin ion exchanger has been 3 mg. of water softened per cubic foot of material. Indications favor even greater life for this material.

Operating characteristics of upflow clarifiers was the subject of a paper presented by Jack W. Pratt, sales engineer, Process Engineers, Inc., San Francisco. In general, upflow clarifiers are used to pretreat process water. However, there is one municipal installation in California where the unit functions as a true clarifier.

New award made

The Fuller Award was presented to James R. Barker, vice-president of Neptune Meter Co. A new Section award, honoring George A. Elliot, first chairman, went to Roy Van Meter, sanitary engineer, Los Angeles Department of Water and Power.

New officers are: chairman, E. A. Reinke, chief of sanitary engineering for the California Public Health Department; vice-chairman, G. E. Arnold, chief engineer and general manager, San Diego water department; and secretary-treasurer, W. W. Aultman, water purification engineer, Metropolitan Water District of Southern California. New directors are B. S. Thomas, Long Beach; L. E. Goit, Los Angeles; and H. C. Medbery, San Francisco.

Revived jurisdictional disputes board tackles new inter-union squabbles

Construction industry group to consider handling machinery, non-metallic sewers, other disputes—New procedures listed

By Joseph Gambatese
Washington Bureau

The re-established National Joint Board for Settling Jurisdictional Disputes in the Construction Industry (ENR Oct. 20, p. 23) hopes soon to tackle several persistent interunion disputes. They involve:

1. Installation of metal windows.
2. Moving machinery.
3. Laying of non-metallic sewers.
4. Installation of heating and air-conditioning units.
5. The conveyor problem, in which both the millwright and iron workers claim the right to install overhead conveyors in mills and factories.

The board has made four new national decisions and assisted in the framing of two national agreements since it was established on May 1, 1948. The plan was terminated by the AFL Building and Construction Trades Department on July 1, but was revived in August under the old procedures while changes were being worked out by a committee representing the AFL, the Associated General Contractors and the eight participating specialty contractors. The revised plan was effective Oct. 1.

Name, membership changed

In one of the major changes, the Board of Trustees becomes the National Joint Board, composed of Impartial Chairman John T. Dunlop, four representatives of the AFL, two from A.G.C. and two from the specialty contractors.

This board is authorized to interpret decisions and agreements of record and established trade practices as they apply to a particular job and dispute. It may make a "job decision" assigning work on the particular job in question, but it sets no precedent for other jobs. Thus, it is no longer necessary to carry to a national decision minor issues that could be settled for one job.

In another change, the pools of employer and labor representatives from which members were selected for Joint Boards (now hearing panels) to hear disputes involving national issues are dissolved.

Instead, the hearings panels will be composed of the impartial chairman (Dunlop), the general presidents of two disinterested unions, and representatives of the affected unions and employers associations.

These hearings panels will hear (1) disputes referred to them by the Joint Board and (2) appeals by unions from "job decisions" of the Joint Board or of local settlement machinery, which unions are urged to utilize.

A hearing panel will attempt to reach a unanimous decision. If it is unable to do so, then the decision will be made by the impartial chairman and the disinterested union presidents. Under the old procedure, the contractor representatives always voted.

When a dispute is filed with the Joint Board requesting a national decision, it becomes the duty of the impartial chairman to call a conference of the unions involved in an effort to bring about an agreement. In this way, the recent settlement was worked out between the carpenters and the laborers on the stripping of wooden forms used for pouring concrete. The old plan called for the president of the building trades to try to bring the disputants to mutual agreement.

Only unions may request decisions on a national basis.

Employers may petition the Joint Board for a job decision only.

Unions are required to remain at work even though they protest the manner in which it was assigned by the employer. This was adopted to strengthen the no-strike policy.

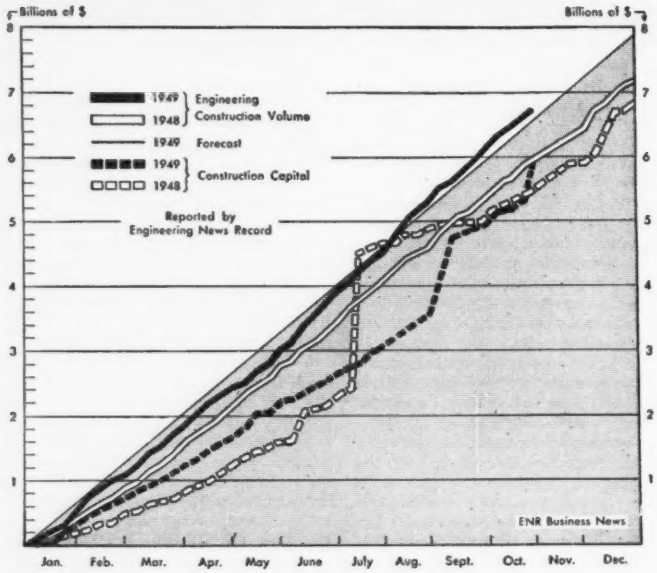
Beach preservation group meets in New York City

The American Shore and Beach Preservation Association held its 24th annual meeting in New York last week in conjunction with the Long Island State Park Commission.

On the first day delegates heard Capt. Thomas A. Scott, chairman of the board of Merritt-Chapman & Scott Corp., discuss elements to be considered in planning shore protection. Col. D. O. Elliot, president of the United States Beach Erosion Board, also spoke.

J. Spencer Smith, chairman of the Interstate Sanitation Commission and president of ASBPA, presided at the luncheon meeting addressed by Mayor William O'Dwyer of New York. The mayor stated that neglect and disuse of his city's 220 mi. of waterfront was over and outlined improvements completed and under way.

CONSTRUCTION BUSINESS



October contract awards lowest in' 49

October heavy construction contracts are the lowest this year.

A more-than-seasonal drop in awards put the total reported to ENGINEERING NEWS-RECORD at only $553,482,000 for the month, 15 percent below October 1948, and 13 percent less than average awards for the first nine months of this year.

Responsible for the October slowdown are: public awards at $68,200,000, down 17 percent from the year's average to date; private awards at $70,100,000, down six percent. State and municipal work at $56,300,000 weekly is off 9 percent; federal awards of $11,800,000 are down 42 percent.

Mass private housing and other commercial building did most volumewise to bolster the month's heavy construction totals. At $45,100,000 a week, they are less than one percent below the year's average to date. Public buildings at $25,800,000, fell 18 percent behind. Industrial building at $15,500,000 is 22 percent below its 1949 average.

Contributing also to the October slump are: a drop in highway construction awards to $15,500,000 weekly from the $25,000,000 a week average reported to ENR during the previous five months. The October rate is 20 percent below the highway average for this year to date. Earthwork and drainage awards of $4,500,000 a week are down 57 percent from the year's 10-month average; and unclassified construction awards, 13 percent lower at $12,600,000 a week.

The bright spots in October's engineering construction picture are a 29 percent rise in sewerage awards to an average of $6,700,000 a week; a 26 percent rise in bridge building to $8,400,000 weekly; and a 7 percent rise in waterworks awards to $4,400,000 a week, all above their 10-month averages.

New construction capital

New construction money from security sales totaled $510 million in October, 52 percent more than went on record a year earlier. In addition to private investment of $162 million in corporate securities, and $348 million in state and municipal bonds, federal construction appropriations of $1,126 million brought the month's new money total to $1,636 million. This brought the 10-month total to $6.6 billions, 25 percent over 1948.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—OCTOBER, 1949

Engineering News-Record *reports continental U. S. Construction projects of the following minimum costs — Waterworks, excavation, drainage and irrigation,* $28,000; *other public works,* $50,000; *industrial buildings,* $68,000; *other buildings,* $250,000

Four Weeks — Thousands of Dollars (000 Omitted)

	October, 1949						U. S. Cumulative Ten Months		% Change	
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1949 (43 weeks)	1948 (44 weeks)	48-49 Aver. Wk.	Canada Oct. 1949
Public Works											
Waterworks	2,187	2,850	2,134	4,926	5,333	308	17,738	178,347	169,258	+ 8	1,295
Sewerage	1,045	12,157	3,804	2,282	4,566	2,979	26,833	225,249	193,991	+ 19	285
Bridges	911	11,809	8,465	2,114	2,572	2,530	28,461	280,871	234,898	+ 22	376
Earthwork and waterways	335	1,324	3,151	415	4,108	8,833	18,166	448,580	439,767	+ 4	496
Streets and roads	3,398	13,958	15,809	4,244	16,290	6,357	60,056	783,604	872,390	− 8	1,545
Public buildings, residential	10,177	5,864	3,713	3,707	616	509	24,586	333,885	124,300	+175	7,436
Other public buildings	2,689	15,151	19,861	15,674	15,704	9,548	78,627	1,017,004	825,164	+ 26	44,267
Unclassified	647	7,420	1,496	1,251	4,418	3,121	18,353	267,500	197,859	+ 38	2,100
Total public	21,389	70,593	58,433	34,613	53,607	34,185	272,820	3,535,040	3,057,627	+ 18	57,800
Federal government (included in above classifications)	277	7,903	9,636	7,351	9,425	12,786	47,378	873,014	825,290	+ 8	1,018
Private											
Bridges	.....	350	100	5,050	.....	.....	5,500	9,418	8,675	+ 11	.....
Industrial buildings	1,787	8,936	6,474	15,789	18,130	11,175	62,291	854,314	947,652	− 8	9,788
Com'l. buildings, residential	750	49,232	14,952	24,023	26,434	16,518	131,909	1,472,515	1,154,532	+ 30	3,460
Other commercial buildings	318	11,152	8,915	9,281	16,226	2,873	48,765	495,355	410,308	+ 23	1,927
Unclassified	.....	320	1,970	1,903	26,726	1,278	32,197	357,976	345,937	+ 6	1,070
Total private	2,855	69,990	32,411	56,046	87,516	31,844	280,662	3,189,578	2,867,104	+ 14	16,245
Total Engineering Construction:											
October, 1949 — 4 weeks	24,244	140,583	90,844	90,659	141,123	66,029	553,482	.....	.....	.....	74,045
September, 1949 — 5 weeks	38,509	255,827	109,726	99,734	211,783	94,730	810,309	.....	.....	.....	44,162
October, 1948 — 4 weeks	27,293	143,644	90,480	69,504	108,620	208,893	648,434	.....	.....	.....	52,025
Ten Months — 1949	293,719	1,749,064	1,001,862	873,429	1,775,452	1,031,092	.....	6,724,618	.....	+ 16	458,814
Ten Months — 1948	278,820	1,577,632	909,121	714,735	1,493,743	950,680	.....	.....	5,924,731	.....	429,229
% Change '48 to '49	+8	+13	+15	+25	+22	+11	.....	.....	.....	.....	+9

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 84 went to press.)

Pine Flat Dam—$24,339,776, the largest bid ever handled by the Sacramento, Calif., office of the U. S. Engineers, was submitted by A. Teichert & Son, Inc., Sacramento, Guy F. Atkinson Co., South San Francisco, Bressi & Bevanda Constructors, Inc., Los Angeles, Charles L. Harney Construction Co., San Francisco, Calif. and J. A. Jones Construction Co., Charlotte, N. C., for constructing the Pine Flat Dam on Kings River, California. This is to be a 456-ft. concrete dam with 1,000,000-ac. ft. reservoir capacity.

Oil Pipe Line—Interprovincial Pipe Line Co., Edmonton, Alta., awarded contracts for pipe-line which will extend from Edmonton, Alta., to Superior, Wis. Total cost of the project is $14,700,000. Among the contractors are Canadian Betchel Co. and Fred Mannix, Calgary, Alta., Williams Brothers, Calgary, Anderson Brothers, Rockford, Ill., Steel Company of Canada, Page Hersey Tubes, Ltd., Welland, Ont., and the Dominion Engineering Wks., Lachine, Que.

Housing—Hackensack Housing Authority, Hackensack, N. J., plans housing to cost $8,500,000. Kelly-Gruzen, New York, N. Y. is architect.

Residences—Saddle Rock Homes Corp., Great Neck, will construct by own forces 200 residences in Great Neck, N. Y. to cost $5,000,000. Edwin C. Kline and A. H. Salkowitz, Jackson Heights, N. Y. are archiects for the job.

Railroad Relocation—Hydro-Electric Power Commission of Ontario, Toronto, awarded contract for relocation of the Canadian Pacific Railway, Timiskaming Branch, for the LaCave Hydro Electric Development to Peacock & McQuigge, Ltd. Leaside, Ont., and Terrier Construction Co., Ltd., Toronto, at $3,068,102.

Plant Addition—Wigton-Abbott Corp. Plainfield, New Jersey, has been awarded contract to design and construct manufacturing plant at Plainfield, N. J., for International Plainfield Motor Co., Plainfield, N. J. at $1,000,000.

Housing—T. A. Loving & Co., Goldsboro, and W. H. Weaver Construction Co., Inc., Greensboro, have been awarded contract to construct, finance and manage housing project at Fort Bragg, N. C., to cost about $10,000,000. Department of the Army, Third Army Headquarters, Atlanta, Ga., let the contract.

Service Center—Foster & Creighton Construction Co., Nashville, Tenn., was lowest bidder for constructing Electric Center at Nashville, Tenn., for Nashville Electric Service, Nashville, Tenn. at $2,327,000.

Steam Generating Plant—Hydro Electric Commission of Ontario, Toronto, Ont., awarded contract steel superstructure steam generating plant in Toronto to Canadian Bridge Co., Ltd., Toronto. Stone & Webster Engineering Corp., New York, N. Y., is engineer and construction manager. Western Foundation Co., New York, N. Y., is driving piles. Total cost of project including equipment will be about $40,000,000. Contract has also been awarded for generator station at Scarborough, Ont., to Foundation Co. of Ontario, Ltd., Toronto, at $3,500,000. This corrects item published October 13 issue.

Housing—King County Housing Authority, Seattle, Wash., plans constructing 1,000 housing units near Seattle, to cost $7,000,000.

Petroleum Pipe Line—Oklahoma Contracting Co., Dallas, Tex., and Grafe-Callahan Construction Co., Los Angeles, Calif., will build steel petroleum pipeline from Boise, Idaho, to Pasco, Wash., for Salt Lake Pipeline Co., Salt Lake City, Utah. Estimated cost is $6,000,000.

State Office Building—Department of Public Works, State of West Virginia, Charleston, has extended date for opening of bids to November 15 for constructing State Office Building at Charleston, to cost $4,500,000. Cass Gilbert, Inc., New York, N. Y., is architect.

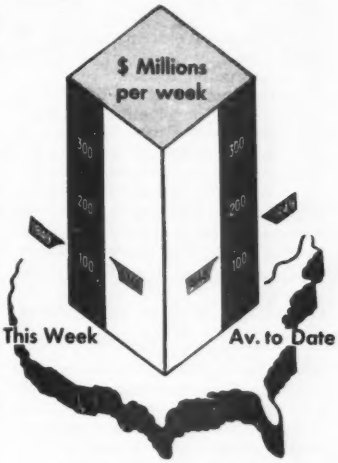
Intercepting Sewers and Treatment Plant—City of Clarksburg, W. Va., postponed to November 16 opening of bids for intercepting and branch sewers and sewage treatment plant. Cost is estimated at $3,000,000. Chester Engineers, Pittsburgh, Pa., is engineer.

Public Utility Systems—City of Fairbanks, Alaska, will vote on $4,000,000 bond issue June 3, 1950, for public utilities, including power, water, heat and phone systems. G. W. Rathjens, Fairbanks, is engineer.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Nov. '49	480.02	230.75
Building Cost	Nov. '49	352.77	190.70
Volume	Oct. '49	248	109



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Nov. 10 1949*	Cumulative 1949 (45 wks.)	Cumulative 1948 (46 wks.)	% chge av.wk.
Federal	$9.5	$892.0	$860.2	+6
State & Mun.	54.7	2,774.4	2,328.6	+22
Total Public	$64.2	$3,666.4	$3,188.8	+18
Total Private	47.0	3,339.4	2,982.9	+14
U. S. Total	**$111.2**	**$7,005.8**	**$6,171.7**	**+16**

Contracts by type of work

	This Week*	Cumulative 1949 (45 wks.)	Cumulative 1948 (46 wks.)	% chge av.wk.
Waterworks	$1.4	$183.4	$175.8	+7
Sewerage	3.9	235.0	198.9	+21
Bridges	18.9	312.7	257.1	+24
Highways	9.9	810.6	901.8	−8
Earthwork, Waterways	3.8	456.5	462.4	+1
Buildings,				
Public	22.3	1,399.5	995.2	+44
Industrial	2.6	862.5	977.2	−10
Commercial	32.2	2,041.4	1,636.0	+28
Unclassified	16.2	704.3	567.2	+27

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (45 wks.)	Cumulative 1948 (46 wks.)	% chge av.wk.
NON-FEDERAL		$3,992.9	
Corporate Securities		1,854.9	
State and Municipal		1,645.7	
U. N. Building Loan		65.0	
Federal-Aid Highway		427.3	
Federal		1,558.9	
Total Capital	**N. A.**	**$5,551.8**	

*—Four Day Week N. A.—Not available

BOCA Approves basic building code

The Basic Building Code it has proposed as a national standard was adopted last week by the Building Officials Conference of America, at its 34th annual meeting, at Washington, D. C.

The code is not expected to be ready before next year, since adjustments in wording remain.

It is the product of five years' effort by representative committees of building officials representing all parts of the country. Before its adoption last week, preliminary drafts had been distributed to all portions of the building industry. Recommendations for changes had been reviewed by a board of consultants consisting of engineers, architects and builders. Final public hearings were held at St. Louis and Detroit this fall by a committee of seven building officials. Code work was coordinated by George E. Strehan. Albert H. Baum, St. Louis building superintendent, was chairman of the basic code committee.

The new code is of the performance-standards type, and aims at permitting the use of materials and construction methods on a functional basis. A code-changes-procedure committee has been appointed to study methods of keeping it—and the abridged version released last year—up to date.

Second phase of the BOCA program for code uniformity involves the standardization of test procedures and the interpretation of test reports for approvals of materials and methods in terms of the Basic Building Code or of any code now in use. This work will be under the auspices of the Building Officials Foundation, founded by and affiliated with BOCA for this purpose.

Further steps toward establishment of uniform national building regulations also were taken at an Oct. 28 meeting of the Joint Committee on Unification of Building Codes (ENR Oct. 13, p. 21). This group, in its four meetings, has agreed to 136 definitions, which will be recommended for adoption to code-writing organizations.

Augmented at the latest session by the Pacific Coast Building Officials Conference, the committee consists of the following organizations:

American Standards Association, Housing and Home Finance Agency, National Board of Fire Underwriters, National Bureau of Standards, National Fire Protection Association, Southern Building Code Congress, Underwriters' Laboratories, Construction Division of the Commerce Department and BOCA.

Baum was re-elected president, and Bert J. Westover, treasurer of the Administrative Building Council of Indiana, was elected secretary. Other officers were re-elected.

Truman addresses ASCE

(*Continued from page 28*)

lic Buildings Administration. "The fact that it stood so long is a tribute to the toughness of good timber," said Mr. Reynolds, citing the cutting down to 2 in. of the 11-in. joists, done when the President's bath was installed. A major item in the reconstruction will be the underpinning of the walls, now dangerously overloaded and founded on unstable soil. A structural frame inside the present walls will carry the future loads.

A sidelight on the dangerous condition attributed to the White House, is contained in the report current in Washington that extreme caution against causing vibrations has been urged in making soil tests now under way. The Raymond Concrete Pile Co. is sinking caissons through the overburden, down to the soil to be tested, rather than driving any of the usual sampling apparatus. General contract for the reconstruction was awarded last week to John McShain, Inc., Philadelphia.

Sanitary—According to A. E. Gorman, sanitary engineer to the Atomic Energy Commission, some of the findings of a broad waste disposal research program are:

Chemical coagulation and sedimentation have been found to be effective in removing radioactivity. But, when these wastes contain dispersing agents, complications may arise and treatment must be carried out at high pH values.

Bottle experiments at Los Alamos indicate that zoogleal bacteria developed in the activated-sludge process have the ability to absorb about 95 percent of plutonium in liquor contaminated by that long-lived radioactive element.

Biological slimes found in pipes and drains carrying sewage have the power of adsorbing and concentrating radioactivity. Maintenance workers on drains, on sewers and related facilities contaminated by radioactive wastes will need the protection of careful monitoring.

Sanitary engineers must be made aware of the importance to their profession now and in the future of education and training in nuclear physics, and its applications, Mr. Gorman emphasized.

Highways—Expenditures for highway construction must be increased substantially if our main highways are to be made adequate.

For needed highway improvements in the Washington metropolitan area, the two states adjacent to the District of Columbia have greatly insufficient funds.

It will take the state of Maryland 48 years to complete its construction program in the two counties bordering Washington at the annual expenditure of about $1,000,000 that now appears feasible, according to William F. Childs, Jr., chief engineer of the State Roads Commission.

Virginia's immediate highway needs in the metropolitan region cannot be met in less than 40 years, C. S. Mullen, chief engineer of the State Highway Department, told the meeting, unless additional financial help is forthcoming to supplement the presently planned construction expenditure of $400,000 a year in that limited area.

As for the District of Columbia, its highway future is "hopeless" without increased assistance from the federal government, Samuel R. Harrison, deputy director of highways, declared. A temporary gasoline tax increase will lapse in 1952. The district then will not have enough money to make even normal highway replacements, he said, unless Congress furnishes added funds or opens up new sources of revenue for the city.

Local highway difficulties were put in national perspective by Commissioner Thomas H. MacDonald of the Bureau of Public Roads. He stressed the fact that a 20-year program to put the 37,800-mile interstate highway system into shape for handling present traffic would cost half a billion dollars a year more than is now being spent on these routes. On a vehicle-mile basis, however, the cost of the program is not excessive, according to his figures. For the $5-billion (at 1948 prices) of urban improvements required, he showed that the annual construction cost would amount to about 1-¢-per vehicle-mile.

Airports—Washington needs a supplementary airport—right now—Phillips Moore, director, Office of Airports, Civil Aeronautics Administration, told the meeting of the Air Transport Division. In instrument weather Washington National Airport cannot begin to handle the volume of traffic. Facilities for air cargo flying, in contrast, are ample.

Make disputes plan work, construction men warned

Construction's labor—management relations must be worked out by the industry itself, or the government will take them over. This was the warning J. T. Dunlop, chairman of the National Joint Board for Settlement of Jurisdictional Disputes in the Building and Construction Industry, gave the National Constructors Association recently in New York. The occasion was the second annual dinner of the organization, which is composed of 19 national contractors who build plants for the oil, steel, and chemical companies.

Citing the renewed industry-wide agreement putting jurisdictional dispute settlement machinery into effect (ENR Oct. 20, p. 23), Dunlop said that this agreement must work. Making it work will be worth all the necessary extra effort and forebearance by both labor and contractors, because government control of labor relation is bound to follow a failure this time.

T. C. Williams, Stone and Webster Engineering Corp, and president of the NCA, outlined the association's activities. The association is concerned primarily with the labor problems encountered by national contractors.

E. J. Dempsey, assistant to the president, American Cyanamid Co., and R. H. Dodds, associate editor of ENGINEERING NEWS-RECORD, also spoke. Dempsey said that the real issue of the present steel controversy is whether the government will set the wage rate in basic industries. If so, statism is sure to follow, he declared.

Dodds declared that the end of a year-long construction cost decline has come and some rises can be expected. A slow increase in labor rates is becoming the predominant cost influence as the end of savings, due to tighter bidding and easier material supply, appears to have arrived.

Stanford Research Group Reports on Subsidence

Some conclusions regarding the specific location of the origin of the subsidence in the Long Beach-San Pedro, Calif., area are presented in a report by the Stanford Research Institute. It also includes a bibliography relative to subsidence and recommendations for further procedures more definitely to establish the cause. It offers an interesting method of analysis that is "looked upon as an important contribution to theoretical soil mechanics."

TIDAL HYDRAULIC EXPERTS—Participants in an Army Engineer conference to study possibilities of lessening dredging necessary to maintain waterways are pictured at Philadelphia. Left to right: Berkely Blackman, South Atlantic Division, Army Engineers; Martin Mason, Beach Erosion Board, Washington; Dr. Boris A. Bakhmeteff, Columbia University; James Johnston, North Atlantic Division; Richard Eaton, South Pacific Division; Jacob H. Douma, Office of the Chief of Engineers, Washington; C. F. Wicker, Engineering Division, Philadelphia Office, Army Engineers; Ralph F. Rhodes, Savannah District; J. B. Tiffany, Waterways Experiment Station, Vicksburg; Dr. Lorenz Straub, St. Anthony's Falls Hydraulic Lab.; Oscar Rosenzweig, Philadelphia District.

The report resulted from an 8-month study sponsored by the Harbor Subsidence Committee, a body of 20 industrial firms and public harbor groups (ENR Oct. 7, 1948, p. 7). All these firms have properties in the subsidizing area and are anxious to know the probable extent of the subsidence and the effect it will have on their property.

The Stanford group reports that the maximum subsidence is now 10 ft. They conclude there is no compaction below a depth of 6,000 ft. The corkscrewing of oil well casings, they say, indicates compression in the 2,500- to 4,000-ft. zone. Water string (outside casings of oil wells to prevent water intrusion) failures at 1,600 ft. are evidence of shear and compression between the surface and a 2,500-ft. depth. However, the report says that the division of compaction above and below a 2,000-ft. level has not been established. The difficulty of the job is evidenced by the fact that the subsidence is less than 0.2 percent of the total subsiding depth.

One of the outstanding contributions of the report is the development of the tension center analysis. This was worked out by Dr. Nabor Carillo of the University of Mexico, a consultant to the Stanford Research Institute for this project. Carillo has demonstrated mathematically that for a homogeneous substance, the depth of the center of tension causing subsidence is equal to the horizontal distance measured on the surface from the greatest subsidence to a contour representing 35 percent of the total subsidence. Thus, he suggests that some three contracting spheres at a 2,000- or 3,000-ft. depth could produce the surface subsidence observed in the survey.

Hydraulic experts study better channel upkeep

How can increased knowledge of tidal phenomena be obtained and used to lessen the cost of maintaining shipping channels? That was the principal problem confronting a three-day conference of hydraulic experts from all parts of the country, sponsored recently by the Philadelphia office of the Army Engineers.

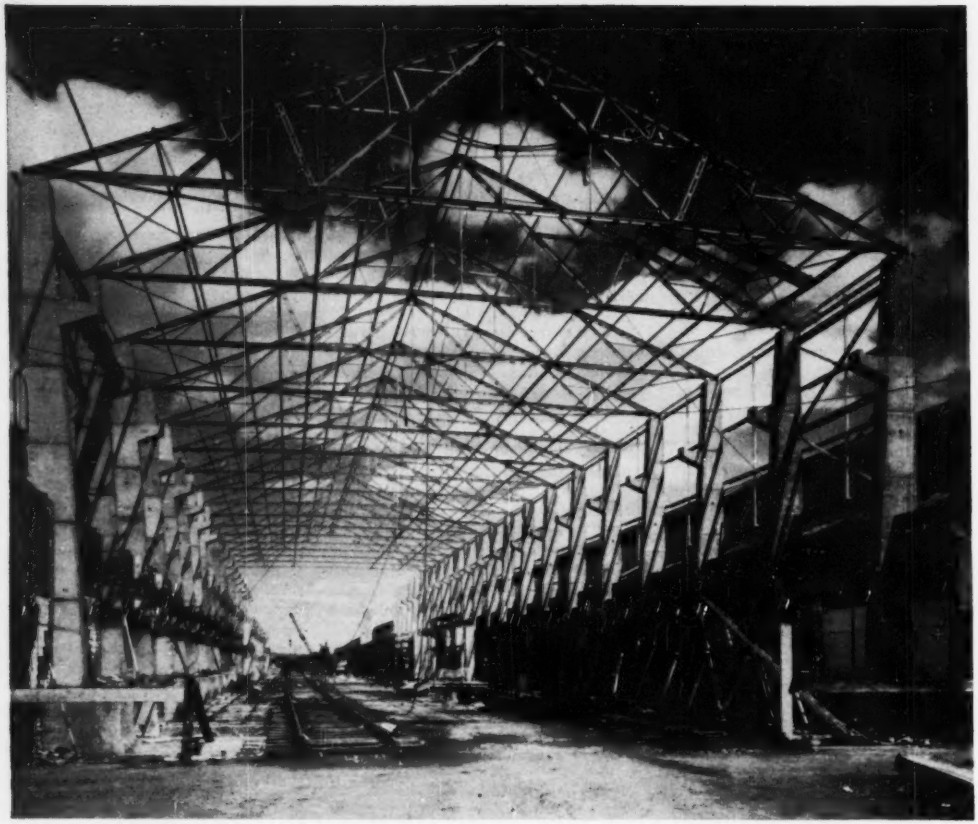
Conference discussions and suggestions are to be used and tested, with reports due at the next conference. A long-range research program on tidal hydraulics was developed.

Create new PHS division of engineering resources

Federal Security Administrator Oscar R. Ewing has announced the creation of a new division in the Bureau of State Services, Public Health Service, to be known as the Division of Engineering Resources. M. Allen Pond, assistant chief sanitary engineer of the Public Health Service, is to be chief of the new division.

Surgeon General Leonard A. Scheele said the division will centralize planning and development of programs of the Public Health Service in sanitary engineering and environmental health. Its creation, he said, is in keeping with steps now under way to enlarge the scope of environmental health activities in the Public Health Service.

The new division also will develop a program in radiological health and will consult with state and local health officials on the prevention and control of health hazards arising out of the use of radiation-producing equipment and radioactive materials.



THE STRUCTURAL FRAME of this mill in England is unique. Concrete columns are prestressed and trusses are aluminum.

Concrete Building Columns Prestressed

PRESTRESSED concrete columns, which support a roof and several traveling cranes, proved to be the answer to many ticklish problems faced by the South Wales Board Mills Ltd. when it erected an addition to its existing works at Alexandra Docks, Newport, Monmouthshire.

Some of the columns were cast solid in one 37-ft length; others were composed of seven hollow units that were assembled and prestressed before erection.

Among the difficulties overcome by the use of prestressed concrete were:

1. A shortage of steel. The prestressed columns required only one-quarter of the amount of steel that would have been needed.

Frederick R. Brewster
London Bureau,
McGraw-Hill World News

2. A shortage of timber. Precasting allowed reuse of forms and of the cores used to form for the hollow columns.

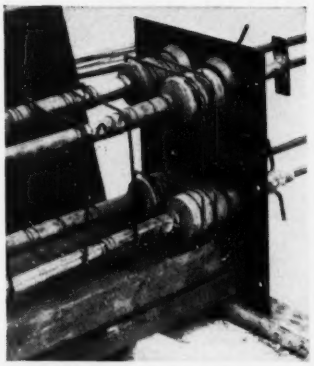
3. A shortage of skilled labor at the site. Precasting and prestressing at Liverpool, under ideal conditions, saved time and work; erection was carried out with a minimum of labor; only a skilled crane operator and a few unskilled manual helpers were needed.

In addition, the project reaped these benefits:

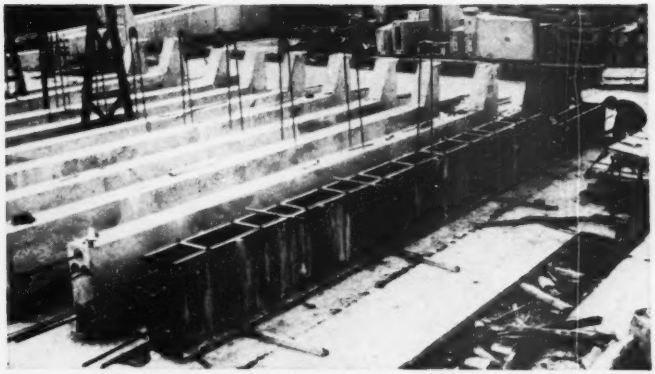
1. Cost was about the same as it would have been if a steel structure had been built.

2. Casting the columns in small lengths enabled them to be made hollow and thus have a stronger section for the same weight.

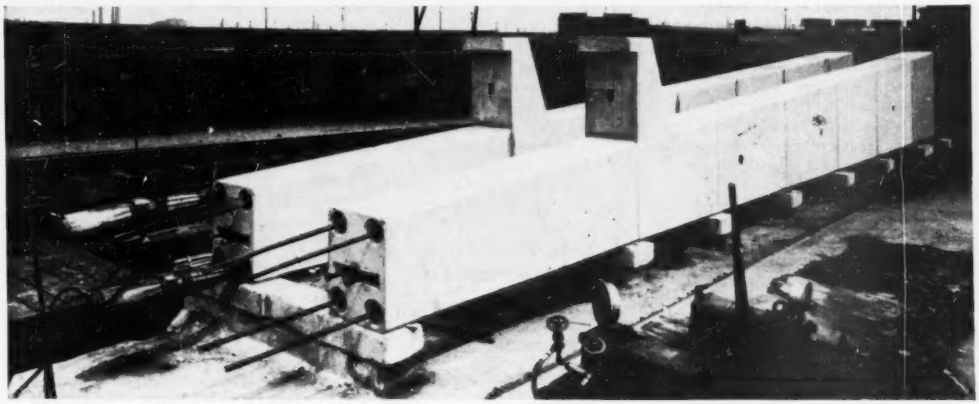
3. The resistance of the concrete columns and aluminum roof trusses and wall structure to corrosion in the extremely humid atmosphere of the board mill is kept high, and special protective measures are not needed. Moreover, the expense and inconvenience of frequent painting that would have accompanied the use of exposed structural steel is completely eliminated from future consideration in maintenance.



CABLES for prestressing were anchored in concrete cones.



FORMS for the columns were of steel. Shown above is one used for casting the solid columns at an outdoor site. Hollow columns were cast under cover.



HOLLOW COLUMNS which were composed of seven units, were prestressed by use of double-acting Freyssinet jacks.

The addition was erected to fill a vacant space 800 ft. long by 58 ft. 6 in. wide between two older bays of the company's mill. Existing 16-ft. high brick walls form the boundaries for the new bay along its full length on both sides. Incorporated in these walls are piers spaced at 15-ft. centers that support the roof trusses of the older buildings.

Columns on 15-ft. centers

The columns for the addition also are spaced at 15-ft. centers, but they are placed midway between the centers of the brickwork piers to avoid imposing additional load on the foundations of the existing structures. Opposite pairs of columns are 62 ft. 6 in. apart, out to out, and hence had to be recessed in the old brick walls.

The addition is 36 ft. high to the eaves, with the result that the new walls project 20 ft. above the old. This height is inclosed with windows and corrugated asbestos-cement sheets carried on aluminum alloy girts bolted to the precast concrete columns. The same construction is used for both ends of the new building.

Layout of the addition

The new bay will accommodate within its 800-ft. length all processes of board manufacture from raw material to the finished product. It was designed around the processes in four sections:

For about 120 ft. at the west end, where raw material enters and is stored, the structure has been left open from ground to eaves.

In the second section, which is inclosed, a floor of normal reinforced concrete for supporting preparation plant machinery was constructed on a series of interior beams and columns. This floor was cast in place and incases anchor rods that were left projecting from the prestressed columns.

In the third section, there is a water tank at the "wet" end and a concrete floor, constructed 9 ft. above the ground floor, that supports machinery. The floors give lateral rigidity to the structure and transfer part of the wind load to the interior columns.

The remaining 150-ft. length of building is open from ground level to eaves and is used for the storage and dispatch of finished products.

Footings monolithic with columns

After a soil investigation of the site had been made, it was decided to limit pressure on footing and raft foundations to 670 psf. Heavy machinery foundations are supported on concrete piles 55 ft. to 60 ft. long.

The prestressed columns were

grouted into socket housings formed in the footings. These sockets had a dowel formed in the center, so that the columns could be made effectively monolithic with the footings and act as cantilevers in resisting lateral sway.

Altogether, 104 precast, prestressed main columns are incorporated in the structure. Two types are used: hollow and solid. These are of approximately equal weight, but weight for weight, the hollow section is far stronger and is placed where no stiffening intermediate floors occur.

Precast in seven lengths, each with 3-in. thick sidewalls and 5-in. thick ends, the hollow columns vary in section from 16x21 in. at the top to 16x50 in. at the bottom. The solid type, precast in one piece, 12x30 in. in cross section, is used in the central areas where intermediate support is given by the cast-in-place floors.

The columns were designed not only to support the roof but also to carry the rail for a large hand-operated crane that runs the length of the building, as well as three smaller electrically operated ones. Cantilever brackets formed on the inside to support the crane runway were reinforced with mild steel rods.

Mixing and stressing

The concrete mix for both types of columns was 3 cu. ft. of ⅜ to ½-in. crushed granite, 1½ cu. ft. of grit (river sand) and 106 lb. of high-early-strength cement. The water-cement ratio was kept low and the forms were vibrated (eccentric-table type). With no artificial curing, cube crushing strengths were 6,400 psi. at 5 days and 9,000 psi. at eight weeks.

Five 12-wire, high-tensile cables, incased in 30-ga. sheaths to prevent bond with the concrete and anchored at the ends in Freyssinet concrete anchorage cones, were inserted in each of the 58 solid columns. The cables were stretched two at a time with Freyssinet double-acting hydraulic jacks (ENR Sept. 1, p. 183) and then grouted in.

Steel cores used

For the hollow-column units, steel cores running through the forms created four longitudinal holes in the concrete for the passage of the prestressing cables. Bolts slipped through these cores and secured by wing nuts acted as form stiffeners. For cable anchorage, four Freyssinet precast concrete cones were cast in each of the end segments. The elliptical voids in the center of the units were formed with three-piece tapered timber cores. These cores proved to be reusable 50 times and left a good interior finish.

A small amount of integral reinforcing was placed in each unit to provide extra strength during the curing period and for handling. As in the case of the one-piece columns, the crane runway brackets were reinforced with mild steel rods.

For prestressing, the segments were first assembled end to end on prepared platforms and the four 12-wire cables threaded through. A ¾-in. thickness of stiff mortar was then applied to the abutting surfaces. Twenty-four hours later—after the mortar had hardened—the cables were stressed with Freyssinet jacks and grouted in.

Casting the columns in sections proved to have two advantages: It greatly simplified the design of the forms, and it made it possible to carry out the work under cover and under close supervision. By contrast, all the casting work on the one-piece solid columns had to be done in the open.

The amount of prestressing for both types of columns was checked with calibrated pressure gauges and by computations based on the recorded extension of the cables. Few cases of slip were noticed, and these did not exceed 1 wire in 48.

The columns, which weighed about 6 tons each, were provided with special holes for lifting and handling. They were erected with a steam-powered crane operating on temporary railroad tracks. Erection time at the site averaged 25 min. for each of the columns.

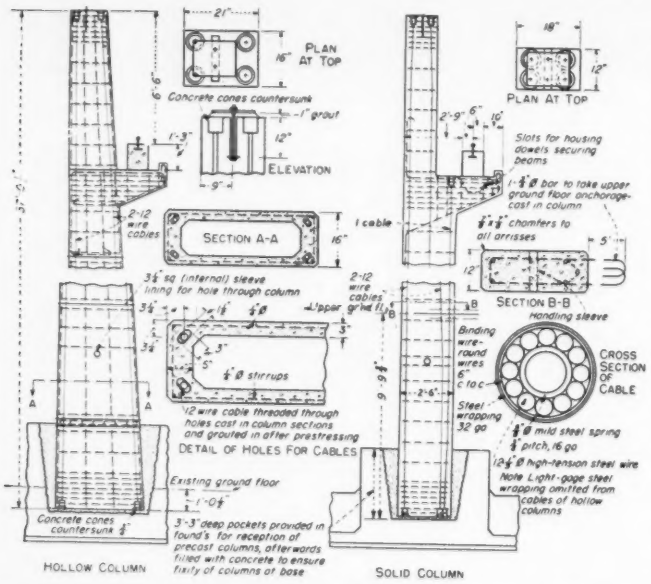
Roof truss erection

The crane that unloaded and erected the columns also placed the 60-ft. aluminum alloy roof trusses, which weigh about one-quarter as much as steel trusses designed for comparable loading. Suspended from the apex, the trusses were lifted into position in one piece. They required no scaffold poles or other temporary stiffening.

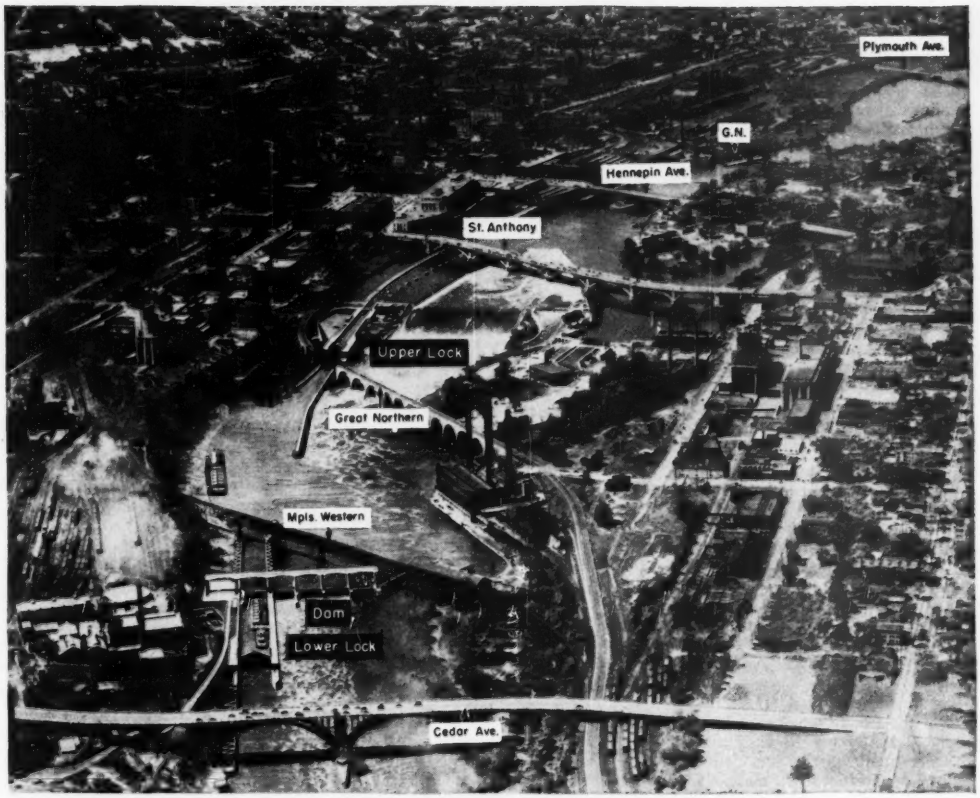
Purlins and wind bracing, also of aluminum alloy, were then installed, and finally the roof was covered with corrugated asbestos-cement.

Structural and Mechanical Development Engineers Ltd. were the principal engineers and contractors. Structural design of the reinforced concrete work and the prestressed concrete was done by J. Bak of London. Precasting and prestressing of the concrete columns was the work of the Liverpool Artificial Stone Co., Ltd.

The columns were shipped by rail from Liverpool to the site, where they were erected by Demolition and Construction Co. Ltd. of London, which firm also placed the foundations and the reinforced concrete floors.


PLAN AT TOP
Concrete cones countersunk
1" grout
ELEVATION
2-12 wire cables
SECTION A-A
1 cable
3½" sq. (internal) sleeve lining for hole through column
Upper grid
4 Ø stirrups
12 wire cable threaded through holes cast in column sections and grouted in after prestressing
DETAIL OF HOLES FOR CABLES
Existing ground floor
Concrete cones countersunk
3'-3" deep pockets provided in found'n. for reception of precast columns, afterwards filled with concrete to ensure fixity of columns at base
HOLLOW COLUMN
PLAN AT TOP
Slots for housing dowels securing beams
1-⅝" Ø bar to take upper ground floor anchorage-cast in column
¾"x¾" chamfers to all arrisses
SECTION B-B
Handling sleeve
Binding wire-round wires 6" c to c
Steel wrapping 32 ga
CROSS SECTION OF CABLE
¼" Ø mild steel spring ¼" pitch, 16 ga
12-¼" Ø high-tension steel wire
Note Light-gage steel wrapping omitted from cables of hollow columns
SOLID COLUMN

SECTIONS AND DETAILS of the precast and prestressed concrete columns.



NAVIGATION STRUCTURES superimposed on this photo will, when completed, open up another river-front harbor.

Mississippi's Highest Lock Will Scale St. Anthony Falls at Minneapolis

ST. ANTHONY FALLS on the Mississippi at Minneapolis is to be scaled by two locks. One, a 49-ft. lift, will be the highest on the river. This improvement will extend the 9-ft. channel another 4.6 mi. upstream and open the Minneapolis Upper Harbor to river barge traffic.

Now in the second of six construction stages, the Upper Harbor project is to cost an estimated $19,500,000 and to be finished in 1954. The first contract (for dredging below the Falls) was begun Oct. 2, 1948, and completed Dec. 10 of that year. Some further dredging has been done, and the second phase, construction of the lower dam, is now well under way.

As part of the Mississippi 9-ft. channel development, the improvement was authorized Aug. 26, 1937, by the 76th Congress and will extend navigable waters northward from the lower Northern Pacific Railroad bridge to the Soo Line Railroad bridge, near the northern limits of the city.

Scope of work

The present project includes construction of a dam and two locks; channel dredging to widths varying from 150 to 500 ft. below, between and above the locks; and alterations to existing bridges and utilities. In general, the following is the order of construction: (1) lower dredging, (2) lower dam, (3) lower lock, (4) upper lock, (5) intermediate dredging and (6) upper dredging.

The lower dam, now under construction is located just downstream from the Minneapolis Western Railroad bridge and will be at the upstream end of the lower lock. It will have four tainter gate sections totalling 280 ft. in length. A fifth submergible tainter gate will be used at the upstream end of the lock, somewhat of an unusual arrangement for the Mississippi. The reason for using

this tainter gate instead of the conventional miter gate is to permit use of the lock as an auxiliary spillway during flood periods. This gate will also be used to aid in filling the lock by allowing water to spill over its top; a standard miter gate will close the lower end. The downstream lock chamber will be 56 x 400 ft. and have a 25-ft. lift.

Work is expected to begin in 1950 on the upper lock, which will have the biggest lift of any on the Mississippi. At Keokuk, Iowa, a power dam lock has a lift of 38.2 ft., but 12½ ft. is the average lift for upper Mississippi River locks.

With channel improvement completed and river surface raised by dam and lock construction, all but one of the structures now crossing the stream throughout the nearly 5-mile long reach will have to be altered. Piers will need protection and streamlining, bridges and portions of bridges will have to be raised and in one case a lift span will be introduced in an existing structure. Of these bridges appearing in the accompanying illustration, only the St. Anthony bridge will remain untouched. And in addition to those in the illustration, the lower Northern Pacific Railroad, upper Northern Pacific Railroad, Broadway Avenue and Lowry Avenue bridges will also be either raised, protected or (as in the case of the Lowry Avenue bridge) replaced. Minimum 26 ft. clearance for barge traffic must be provided. The City of Minneapolis will make alterations necessary to highway bridges and utility structures.

Model aided design

An exact replica of the affected reach of river was built to a 1 to 50 scale in the St. Anthony Falls hydraulic laboratory. This model has since been dismantled, but not before sufficient tests and studies had been made to find the most desirable locations for locks, dams and appurtenant structures. Model tests were also run on the unique lower lock with its submergible gate at the upstream end. Tests have shown that the lock can be filled without undue turbulence, in less than seven minutes, utilizing the upstream gate and a culvert located in the landward wall of the lock.

When completed, this extension of navigation through the city will open up to industry a stretch of river bank, low, flat and suitable for industrial development. A number of power plants are already being built near the water in this upper harbor vicinity; coal will soon be brought in by water—something that has not heretofore been possible—and Minneapolis will have one of the finest harbors on the river.

Dunbar & Sullivan Dredging Company of Detroit, Mich., has done dredging on stage 1 of the project. Clarence W. Buending was resident engineer for the contractor.

Al Johnson Construction Co. holds the $1,656,415 contract for building the lower dam, stage 2.

All work is being supervised by the Corps of Engineers under Col. Leverett G. Yoder, St. Paul district engineer. Design and first stages of construction were started by Col. Walter K. Wilson, Jr., who was succeeded by Col. Yoder in mid-July. Col. Wilson was then transferred to the Mobile, Ala., district.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Substantial Performance

"The common-law rule required literal performance of building contracts, but the American courts generally hold that substantial performance of such contracts will support a recovery either on the contract or on a quantum meruit basis. Three reasons are given for that holding. One is that materials and labor upon a building are such that even if rejected by the owner of the land he receives benefit thereof. Since the owner receives the benefits of the builder's labor and materials, it is equitable to require the owner to pay for what he gets. The second reason is that it is next to impossible for a builder to comply literally with all the minute specifications in a building contract. And the third is that the parties are presumed to have impliedly agreed to do what is reasonable under all the circumstances with reference to performance.

"It is a necessity in support of the foregoing doctrine that the contractor must have acted in good faith and not intentionally failed to perform the contract. The rule of substantial performance can not be invoked where the failure to perform is wilful, intentional or due to carelessness, unless the omission falls within the category of de minimis or unless the omission, though intentional, is due to a belief that performance in that respect is not required. (Am. Jur., page 31, par. 41.)

"The question of substantial performance is one to be determined in each case with reference to the existing facts and circumstances. Substantial performance is not literal, full or exact performance in every slight or unimportant detail, but performance of all important particulars. Substantial performance exists where the building or structure as a whole is not impaired; where the building or structure can be . . . used after it is erected for its intended purpose; where the defects can be remedied . . . without any great expenditure and without material damage to other parts of the structure, and may without injustice be compensated for by deductions from contract price. . . . (17 C.J.S., Contracts Section 509, page 1090)."[1]

In this case the court also held that even though the contract provided that the final payment would be made after the issuance of the final certificate of the architect, the failure of the architect to issue such certificate did not preclude the contractor from maintaining an action to recover the balance due under the contract, where the action is brought under the theory of substantial performance.

"The recognized right to sue for substantial compliance with the contract, necessarily means there has not been literal compliance therewith. If the contractor must obtain from the architect a final certificate of complete compliance before the contractor can bring a suit, he could never avail himself of the right to sue for substantial compliance."

For other cases on this subject, see ENR Sept. 2, 1948, p. 80.

(1) Standard Millwork & Supply Co. v. Mississippi Steel & Iron Co., 38 So. 2d 448 (Supreme Court of Mississippi, Jan. 4, 1949.)

Installment Payments

The owner's refusal to pay an installment of the contract price when due, is such a violation of the contract on his part as will justify the contractor in refusing to go on with his contract and enforce a lien for the work done.[1]

For other cases on this subject, see ENR Sept. 16, 1948, p. 103.

(1) Gabriel v. Corkum et al., 196 p. 2d 437, (Supreme Court of Oregon, July 13, 1948) and numerous cases and authorities there cited.

Huge Guide-Traveler Speeds Driving of 65 Miles of Sheetpiling

SHEETPILE DRIVING was a mass production proposition on a ground-stabilization project at Bethlehem Steel Co.'s Sparrows Point plant in Maryland.

With 7,400 pieces of straight-web steel piling (65 miles in all) to drive to total depths ranging from 90 to 98 ft., the contractor built a traveler that carefully positioned the piles for their deep descent, and that mounted two driving hammers on trolleys.

The construction site lay parallel to the Patapsco River, adjacent to a bulkhead and marginal pier. Under the weight of iron-ore stockpiles, the underlying silt had begun to settle and push the bulkhead out of line. The solution, sought to arrest lateral displacement of the silt, was to build 18 inter-connected steel sheet-pile cells, each 30x200 ft. in plan, the long sides being perpendicular to the bulkhead and common to adjacent cells. The piles were driven through river silt into brown clay. Regular piles were 35-lb. flat sections, 15⅝ in. c. to c. of interlock; one special, a "Y" for the junction of cell-ends and diaphragm was used.

Actually, the overall stabilization scheme was not new; the cell series tied into a similar series placed in 1938. But the contractor's solution of this exacting construction problem contained some original features, and it was effective.

Perfect position essential

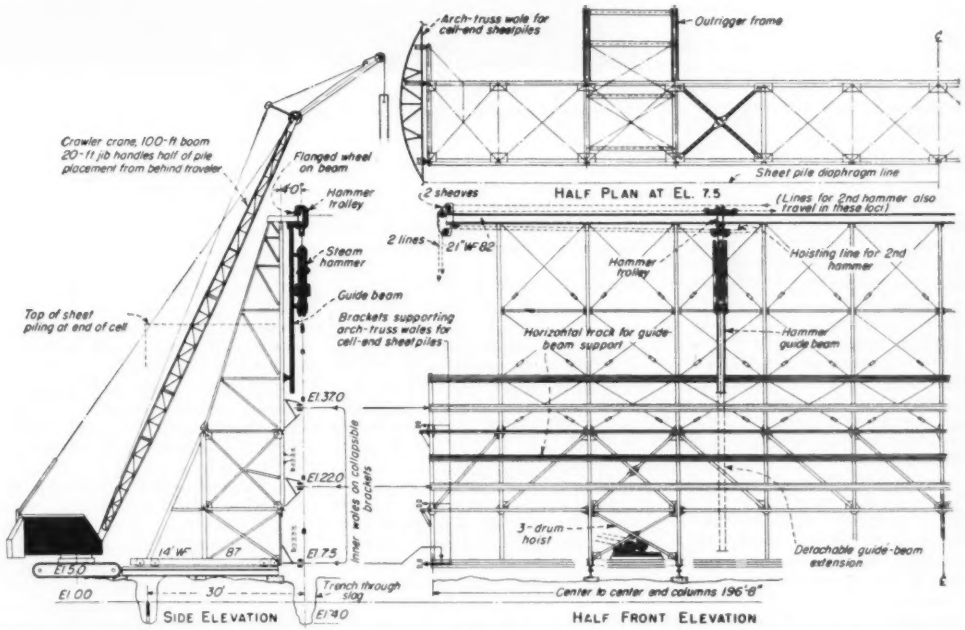
The entire scheme of sheetpile cells hinged upon whether the flexible straight-web sheets could be driven to extreme depth. To succeed, it was essential to start the piles in nearly perfect position. This was the prime reason for the big traveler.

The job was organized to set one cell at a time (a new 200-ft. diaphragm and two cell-ends interlocked to the previously-driven cell). Piles were driven in two flights, lapped 14 ft. with the aid of 14-ft. followers in alternating pile positions on the first flight. Pile-length combinations varied from 38-52 for 90-ft. depths to 42-56 for 98-ft. depths.

Cycle of driving

The operational cycle for one cell was: The traveler was moved into the cell area; piles were threaded to position on the traveler; and then the whole first flight was driven, in 5- and 10-ft. increments. Followers were removed, and the threading-and-driving procedure was repeated for the second flight.

When the job was rolling, the whole cycle, from traveler move to



STEEL TRAVELER positions piles perfectly and carries the driving hammers. Collapsible brackets, shown in side elevation, carry wales that drop out of way to allow attachment of hammer guide beam extension.

traveler move, could be completed in ten 7-hour shifts.

The heart of the work

The solution's central feature was the rail-mounted traveler. It was built in the form of a large sign-board frame, 70 ft. high and 196 ft. wide, with a 30-ft. base. The presence of bridge cranes that operated astride the site limited the traveler's size, and therefore the length of pile that could be driven.

At both ends of the traveler base, over 8-wheel trucks, three-drum hoists were installed, each to handle one single-acting steam hammer suspended from a trolley that rode along the top of the framework. One drum hoisted the hammer and two traversed it. Four 20-ton steel slabs were mounted outboard on each of the trucks, to counterbalance wind forces on piles when they were interlocked in position for driving. Truck wheels were double-flanged, and they rolled on standard steel rails laid on I-beams that were supported at three points by shallow concrete footings.

Guiding the piles

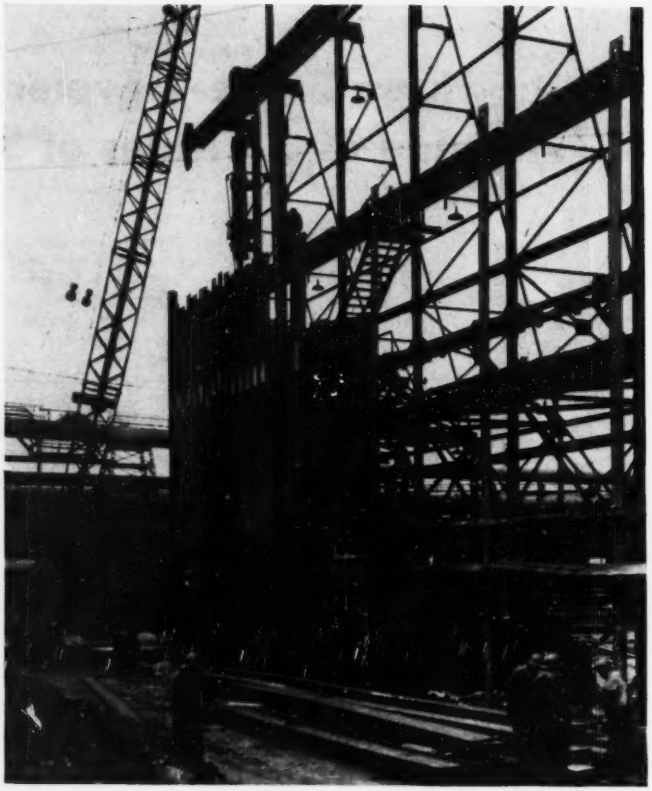
The arrangement for guiding piles down the front face was designed to attain rigid alignment through a succession of wales and at the same time to permit quick removal of the wales before the driving hammers passed them.

Inner wales were mounted at 3, 18 and 33 ft. above grade. Each carried pile-web positioning blocks carefully spaced and lined vertically with the corresponding blocks on adjacent inner wales, so that a pile laid against these corresponding blocks would be in perfect position for driving.

The use of guide-blocks in the wales, to hold the sheet pile spacing, was an unusual expedient. In view of the long length of the diaphragm wall subjected to horizontal tension, the standard spacing of 15 in. for the piling was increased to 15⅛ in. to cut down the stretch of this wall. Guide blocks were deemed the best way to obtain the stretched spacing.

Outer wales were used at the lower and intermediate levels. They were pipes that were secured to the inner wales by hook-bolts, through holes burned in the piling.

Two of the inner wales were attached to traveler bents by pin-connected brackets. For quick removal of these wales, two pins were pulled, allowing the whole assembly to swing down out of the hammer's way. The lower wale, whose support was a horizontal boom and a diagonal cable from above, was merely detached from the traveler, again by removal of two pins.



SETTING THE DIAPHRAGM—Blocks on inner wale establish pile-web positions. Lone piles plumbed and checked by transit were spaced to control other piles.

One more device aided alignment. That was the hammer-guide beam, a vertical track down which a hammer traveled during driving. The guide beam was connected to the traveler frame by a shaft to a small dolly that rolled horizontally in a slotted steel-box run fixed on the frame.

Together, the guide beam and the trolley track kept the hammer in a fixed plane, a fact that enabled quick hammer-positioning during the driving operation.

Driving cell ends

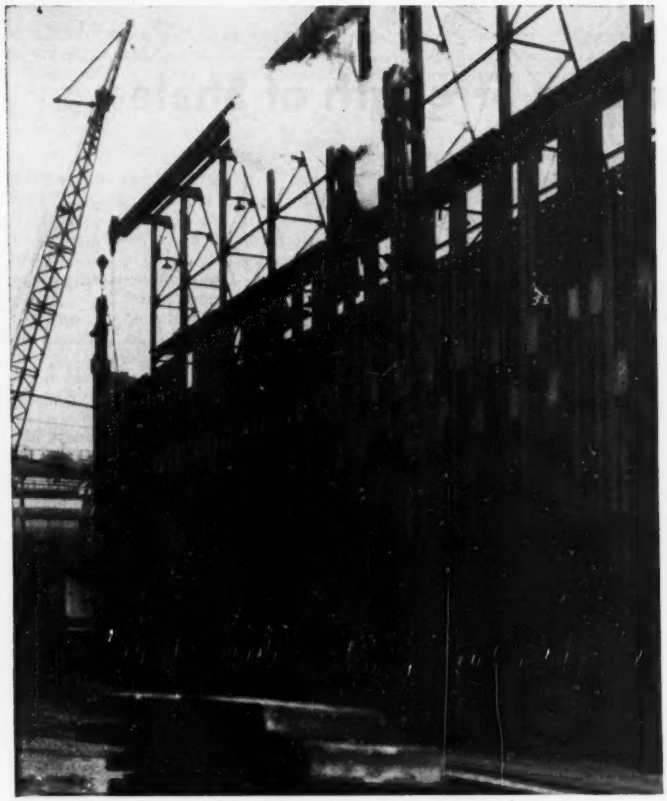
All of the foregoing covers the part of the traveler that was designed to handle the 200-ft. diaphragm between cells. Cell-end arcs were held in place by wales that were timber bow-trusses of 27½-ft. outer-chord radius, mounted on their sides, three at each end of the traveler. Pipes bent to the proper curvature were the outside wales. Crawler cranes handled the hammers that worked these piles.

Preparing to drive

Before the traveler could move into a new cell area, it was necessary to build footings for the rail beams and to dig trenches where the piles were to go. The top 6 ft. of ground was poured slag, which would have been impossible to penetrate, so the trenches were routed with pavement breakers, down through the slag. However, the slag layer's high bearing capacity made footing construction a simple matter.

With beams and rails installed, the contractor hooked each traveler truck to a crane drum, through a 10-part tackle, then moved the traveler ahead. The 10-part tackle gave the low speed necessary for careful movement. When the traveler was in place, its wheels were blocked and tied down.

Meanwhile, a further guiding device was being secured in the trench bot-



DRIVING THE FIRST FLIGHT—Trolley hammers move back and forth to drive sheetpiles. Followers will be removed for driving of the second flight.

tom. This consisted of a pair of pipes shimmed far enough apart to admit the piles. The slot was located precisely in the design pile position.

Then the pile placement began. The first step was to set controlling plumb piles, at about every 14th pile position. These were laid against their waler blocks, then checked by transit, and secured to all wales.

Two crawler cranes handled the piles. One, with an 85-ft. boom and 10-ft. jib, worked half the job from the front of the cell; the other, with a 100-ft. boom and 20-ft. jib, handled the other half from behind, booming over the traveler to pick up piles and place them. Piles were stockpiled at the front face. (After piles were placed these cranes handled hammers at cell-ends.)

After the plumb piles were in, setting of piles and followers proceeded both ways from the plumb piles, and final interlocking closure took place at the center of the diaphragm. Adjustments for closure were made by a steel-rod yoke, with hooks that fitted into holes at the pile tops. A turnbuckle on the yoke shaft applied the necessary tension or compression.

Driving the piles

When all piles and followers were in position, the plumb piles were released and their ties (hook-bolts at wales) were transferred to nearby piles. The two trolley hammers, equipped with helmets that fit two piles, then drove all diaphragm plumb piles 10 ft. down.

At that point the job became "tooled up" for mass production. The hammers began to range along the diaphragm, each traveling from center to its own end and back again, driving alternate pile pairs down 5 and 10 ft. at a time. Plumb piles, theoretically in best alignment, were kept 5 ft. below the others to spearhead the penetration. While all this was going on, crews kept busy moving hook-bolts from pile to pile in order to release piles that were about to be driven and at the same time keep the interlocked assembly tied in vertical position. The men burned bolt-holes wherever they were needed in the web. And as the piles approached a wale, the wale was dropped out of the way. At the same time extensions were placed on the hammer-guide beams.

Meanwhile, cell-end driving by two single-acting steam hammers, each suspended from one of the cranes, proceeded. Although these two hammers drove but one-third as many piles as the two trolley hammers did, they accomplished their task no faster. The slower rate was attributed to three-dimensional spotting required with the cranes, compared with two-dimensional spotting with the trolleys and guide beams.

When the shorter piles reached the ditch guides, the followers were withdrawn. Three sets of followers, or about 300 14-ft. pile lengths, were used on the job. In general, these lengths lasted through seven drives.

Once the followers were removed, the setting and driving process was repeated. The only splice between lower and upper flights was made at the Y-pile where diaphragm and cell-ends met. At maximum penetration into hard clay, the piles took more than 500 blows per foot.

As soon as a drive was finished, beams and rails were laid on new footings, traveler wheels were unblocked, and the traveler itself was rolled forward for work on a new cell.

Progress

It took almost three months to get the first cell in, but after that, the remaining 17 cells were completed in a little more than six months. At full operation, there were 70 men on the day shift and 60 men on the night shift, including five pile-driver crews on each shift.

Relative to the difficulty of driving a flexible diaphragm to such depth it is noted that for a typical cell the total time to move the traveler, thread the first flight, drive to 40 ft. depth, thread second flight and drive to about 70 ft. depth required only half the time for the complete cycle; the driving of the bottom 20 ft. required the remaining half.

Management

Bethlehem Steel Co. was the owner, as has been mentioned. Booth & Flinn Co., Pittsburgh, was the contractor. Moran, Proctor, Freeman & Mueser designed the stabilizing structure.

Simple Tests for Strength of Shales

Oscar Hoffman
Professor of Civil Engineering
and
Harry R. Nara
Engineering Mechanics Instructor
Case Institute of Technology
Cleveland, Ohio

DEEP FOUNDATION CAISSONS that carry heavily concentrated loads must be founded on strata of known bearing capacity. Ordinarily, triaxial compressive tests on undisturbed core borings are recommended for determining the load-carrying capacities and other mechanical properties of conventional sub-surface materials involving sand, clay or silt.

But sub-surface explorations for permissible caisson loadings conducted in Cleveland, Ohio last summer revealed unusual preglacial formations, for which the standard triaxial compressive test was deemed impractical. This led to the development of a simple procedure for predetermining allowable foundation design loads, based on tests of core borings. This procedure saves both time and expense as compared with more elaborate methods heretofore used.

Heavy footing design loads

The boring tests were made in connection with a planned expansion of the Otis Riverside Plant of the Jones and Laughlin Steel Corp. Contemplated footing design loads ranged up to 185 tons per sq. ft.; equivalent to 900 tons on a 30-in. dia. caisson.

Previous borings made in 1943, together with visual inspection of the cores, had determined both the character and depths of the various strata. Consequently, the borings made last year were for the prime purpose of determining safe foundation loads.

Unusual geological formation

A characteristic feature of the geology of the Cleveland area is the existence of a deep buried preglacial valley having a flat V-shaped section and running in approximately a north-south direction. The deepest point of the valley is about 500 ft. under the street level and is filled with a glacial till of variable composition and strength.

This preglacial valley is carved into the so-called "Chagrin Shale"—a blue-gray clay shale of devonian age whose mechanical properties assume engineering importance near the margins of the glacial till, where the shale is close enough to the surface to make it economical to transfer to it heavy concentrated loads by means of caissons.

Several borings were made at the plant-expansion site along the Cuyahoga River, about four airline-miles above its junction with Lake Erie, and about ½ mi. inside the western rim of the buried valley.

Two of the borings, designated Nos. 36 and 38, were extended about 5 ft. into the underlying shale. They were drilled about 900 ft. apart, encountering shale at a depth of 141 ft. in one, and at 199 ft. in the other. Samples of shale taken from these two borings were cut by rotary drill. They were about 1⅞-in. in diameter, with a very regular cylindrical shape.

It is well known that the most complete and widely useful representation of the strength properties of rock type materials is that furnished by the envelope lines of Mohr's circles representing stress states at failure. For the shale in question, like many other brittle materials, the envelopes were assumed to be straight lines.

The accuracy of such an assumption is to be proved in each case; but it was felt that it was practically admissible within a narrow range of values of the principal stresses: say two or three times the unconfined compressive strength. Triaxial compression tests are best suited to materialize a variety of critical stress states from which envelope lines to Mohr's circles can be plotted.

In the case here reported, the comparatively high strength of the "Chagrin Shale" made the conventional triaxial compressive soil testing devices unsuitable for the purpose and the following simple procedure was decided upon—using the cores taken from test borings Nos. 36 and 38. Other borings ended in glacial till material. Samples taken from them were tested by standard triaxial compression tests.

Two parallel sets of tests

Two parallel compressive tests were performed on contiguous specimens cut from each boring sample—one in the laterally unconfined and one in a state of lateral confinement. The second test condition was obtained by placing the specimen inside a steel sleeve with the consequent "frettage" effect, comparable with that produced by spiral reinforcement in concrete columns. This could be termed a "dry triaxial compression test."

The unconfined compression tests were performed in an hydraulically operated testing machine while the specimens were protected from moisture loss by a thin plastic coating. Failure occurred in both specimens by cracking along nearly plane vertical surfaces. A stress-strain diagram (Fig. 1) was obtained from these tests.

The laterally confined specimens were placed inside the steel sleeve (Fig. 2) and a gap of about 0.04 in. between the sleeve and the shale specimen was filled with neat cement grout 2 days before performing the tests. Axial loads were applied on the full cross-sectional area of the specimens and the circumferential strains on the outer diameter of the

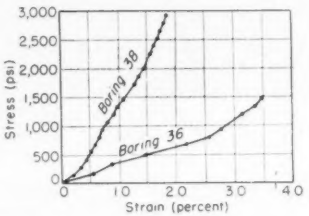


Fig. 1. STRESS-STRAIN diagrams were prepared from unconfined compression tests made in an hydraulic testing machine.

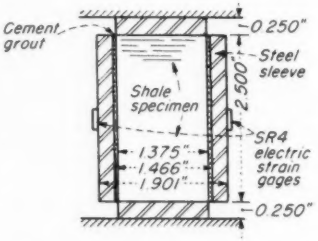


Fig. 2. DRY TRIAXIAL CONFINED COMPRESSION TESTS were made with S4R strain gages on shale specimens placed inside a steel sleeve. Cement grout was added between periphery of shale specimen and steel sleeve.

steel sleeve were measured by two SR4 electric strain gages.

The confining lateral pressures were computed by the formula derived from the theory of thick tubes*:

$$s_h = \frac{E\,(a^2 - b^2)\,\epsilon}{2b^2}$$

in which:

s_h = confining lateral pressure
E = modulus of elasticity of steel = 30,000,000 psi.
a = outer radius of steel sleeve = 0.9505 in.
b = inner radius of steel sleeve = 0.733 in.
circumferential strain, from strain gage readings.

Substituting the numerical values for E, a and b, the formula becomes:

$$s_h = 10{,}200{,}000\ \epsilon$$

Curves were plotted (Fig. 3) of the calculated lateral pressure (s_h)

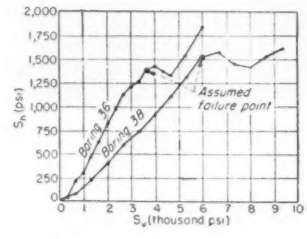


Fig. 3. THE TRIAXIAL COMPRESSION TESTS on the confined shale specimens led to calculated lateral pressures which were plotted against applied vertical pressures.

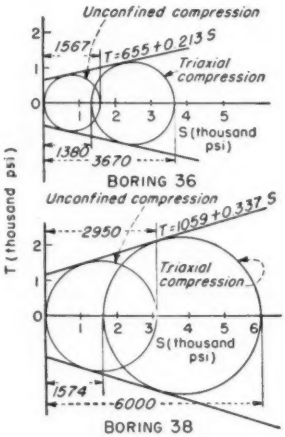


Fig. 4. MOHR'S STRESS-CIRCLES were plotted for both the unconfined specimens and the confined samples, tested by the triaxial compression method.

against the applied vertical pressure (s_v).

In both confined specimens failure developed suddenly and the state of the specimens after the tests indicated a rather uniform fracturing of the entire specimen. Mohr's circles representing the observed stress states at failure were drawn (Fig. 4), together with the presumedly straight line envelopes. The latter have the following equations:

Boring No. 36: $t = 655 + 0.213s$ (psi.)
Boring No. 38: $t = 1059 + 0.337s$ (psi.)

Where t is the shearing stress, s is the normal stress on the section of failure.

Young's modulus of elasticity (E) was estimated from the average slope of the stress-strain diagrams (Fig. 1) from unconfined compression tests, as follows:

Boring No. 36: E = 40,000 psi.
Boring No. 38: E = 120,000 psi.

Poisson's ratio (μ) was estimated from the laterally confined compression tests. Assuming that the strains in the steel sleeve are negligible in comparison with those in the shale specimen, the following formula was derived:

$$\mu = \frac{s_h/s_v}{s_h/s_v + 1}$$

in which s_h/s_v is the average slope of the s_h, s_v curves shown in Fig. 3.

The estimated values are:

Boring No. 36: $s_h/s_v = 0.387$ $\mu = \dfrac{0.387}{1.387} = 0.279$

Boring No. 38: $s_h/s_v = 0.304$ $\mu = \dfrac{0.304}{1.304} = 0.233$

Time-saving procedure

In conclusion, a rather complete picture of the mechanical properties of the shale samples could be obtained by the somewhat non-orthodox procedure herein described. The procedure certainly is time and expense-saving in comparison with the usual method which employs large lateral hydrostatic pressures and correspondingly a specially-built pressure chamber device. The only custom-made equipment here employed was the steel sleeve made of chrome-molybdenum steel.

The most notable difference between the two methods from the standpoint of load application, consists in the sequence of load application. In the usual procedure a uniform hydrostatic pre-pressure ($s_h = s_v$) is applied, then increasing values of the stress-difference ($s_v - s_h$) are applied until failure. In the procedure here described the lateral pressure (s_h) increased gradually with the vertical applied load as determined by the stress-strain properties of the shale sample and that of the steel sleeve.

Whether the two procedures give equivalent results is yet to be proved though it can be considered as very likely. Indeed, the well-known experiments performed at the University of Illinois with concrete cylinders showed practically identical triaxial compressive strength values—regardless of whether the lateral hydrostatic pressure was applied in its full value first, or it was developed gradually by the spiral reinforcement.** ***

The tests were made at the Warner Laboratories of Case Institute of Technology at the request of E. McGeorge and W. R. Hargett, consulting engineers, Cleveland, Ohio. The borings were made by the Raymond Concrete Pile Co.

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* R. J. Roark; Formulas for Stress and Strain, 2nd Edition, New York, 1943, P. 264.

** F. E. Richart; A. Brandtzaeg; R. L. Brown; A Study of the Failure of Concrete Under Combined Compressive Stresses, University of Illinois Bulletin No. 12, Vol. XXVI, November 1928.

*** F. E. Richart; A. Brandtzaeg; R. L. Brown; The Failure of Plain and Spirally Reinforced Concrete in Compression, University of Illinois Bulletin No. 31, Vol. XXVI, April 1929.

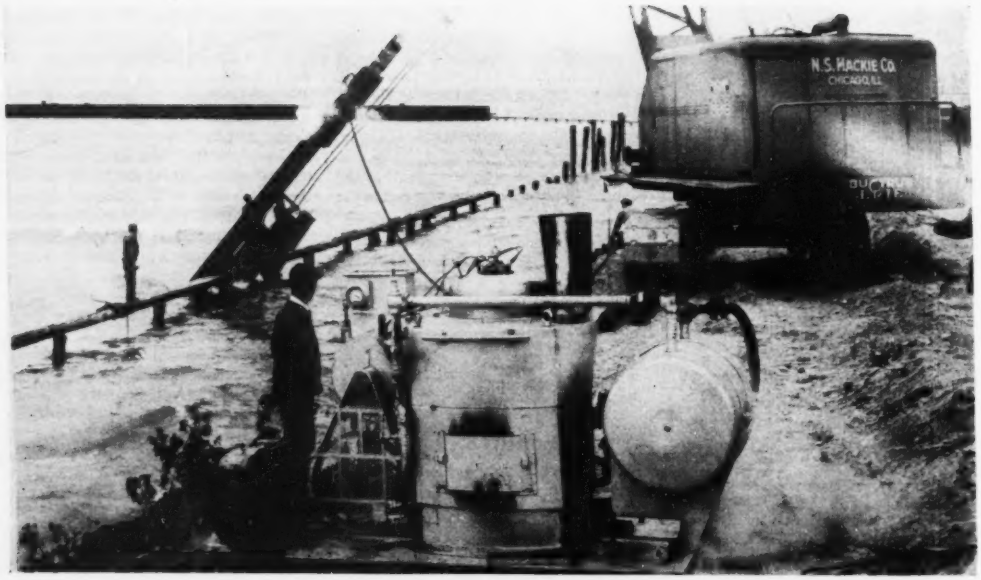
N. Y. Elevated Highway To Be Repaired Next Year

Repair work estimated at $760,000 must be performed on the West Side Highway in New York City next year, according to Manhattan Borough President Hugo E. Rogers. The work will repair damages Rogers attributed to the use of rock salt to snow and ice-covered paving.

The section of the highway to be repaired is an elevated expressway paralleling the Hudson River. Completed in 1936, it is of steel, through-girder construction and is paved with granite block for about 4 mi.

In this stretch, ending at 72nd Street, curbing, drainage troughs and the top of the reinforced concrete structural slab are reported to have been damaged to a depth of one inch.

Present plans call for resurfacing with three-in. of asphalt on a three-in. concrete base, as well as reconstructing the curbing and troughs. Only one lane in each direction will be closed at one time. Work is expected to start next March.



Pile crew never has to wait for steam, even in hard driving, so . . .

Steam Generator Cuts Piledriving Costs

A ROUTINE PROJECT? There is no such thing to a progressive contractor. Each new job —no matter how simple—poses a challenge to him to do the work cheaper, quicker and better. Each has its peculiar problems.

Take, for example, a breakwater now nearing completion at the southeast corner of Lake Michigan. It is a simple thing: steel sheet piling with riprap at the toe of the face and batter-pile anchorage behind. But the contractor is supplying steam for his crane and hammer from a portable steam generator that saves up to 66 percent in fuel and increases net working time of the pile crew 12 percent by eliminating waits for steam. And for the breakwater itself he suggested a design revision that speeds up the work by eliminating all but downhand welding.

The breakwater is part of the Northern Indiana Public Service Co.'s expansion program at their Michigan City (Ind.) generating station where two new units are being added to increase plant capacity to 206,000 kw. from the present 64,000. While the breakwater has a return section forming one side of a canal for the discharge of cooling water, its main purpose is protection. It will prevent further erosion of the lake shoreline, which has receded some 150 ft. during the past 20 years. Also, the area enclosed by the breakwater will be used as a dumping ground for the generating plant's fly ash.

The total length of the structure is 3,600 ft. It consists of: (1) a 2,320-ft. diagonal arm tying into shore; (2) a 560-ft. section parallel to shore; and (3) the discharge canal wall, which is 720 ft. long. The face of the breakwater is deep-arch interlocking steel sheet piling (M-116) weighing 36 lb. per ft. Lengths vary from 26 to 40 ft.; are driven to penetrate 17 ft. of silt, hard clay and sand; and extend 8 ft. above normal lake level. Batter piles on 6-ft. centers anchor the sheeting through a single waler 4 ft. from the top. Anchor piles are 16-in. 40-lb. WF beams battered 12 on 9; the waler is a 10-in. 72-lb. H-section. About 2,700 sheetpiles and 600 batter piles are required.

Most of the piles are driven by differential steam hammers handled by floating equipment. However, the return section can be driven from land by a diesel crawler crane reaching across the discharge canal, so the contractor works on this stretch when the lake is too rough for marine operations. To supply steam to this hammer, the contractor adapted a small steam generator that has proved so successful he also uses it with his floating rigs. On one section it supplies simultaneously a 1¼-yd. steam crane and its pile hammer.

Compact steam generator

The generating unit, originally developed by Vapor Heating Corp., Chicago, for installation in diesel locomotives for passenger train heating, is only 5x7 ft. in plan, 6 ft. high, and weighs less than 5,000 lb. It has an evaporating capacity of 3,000 lb. per hr., and develops a full head of steam (up to 300 psi.) in less than 2 min. from a cold start. This feature alone saves an hour a day for the fireman who used to report early to steam-up the boiler formerly used.

But that is only a small part of the savings. With safety valve set at 175

PORTABLE GENERATOR supplies ample steam. The unit has a 48x16-in. insulated steam chest. A small gasoline engine drives fuel and water pumps and air blower.

6,000 TONS OF riprap protect the toe of the breaker. Note the perfectly straight line of sheeting and the neat batter-pile connection detail. Bulldozing stone from barge saved crane costs.

psi., a steady 125 is delivered to the hammer for continuous operations at maximum efficiency. The unit develops steam so fast that the hammer never draws the pressure down even under sustained driving of tough piles. This means that the piledriving crew never has to sit idle waiting for steam —a process that consumed a total of 1 to 1¼ hr. per shift before. The steam generator is automatic in operation and economical on fuel.

It all adds up to impressive savings. Brent Coppens, general superintendent, puts it this way: "The men never thought that little machine would produce enough steam. But it has, and look what it's saved us over our early job costs. We save 1 hr. for the fireman plus, say, 1¼ hr. for the entire 7-man pile crew. That's nearly 10 man-hours a shift. Fuel? We burn only 100 gal. of No 3 oil a day, as against 250 to 300 for regular boiler steam. And we're getting the job done faster, so our overhead is lower."

Breakwater construction

In building the breakwater, a string of timber falsework piles is driven on 8-ft. centers just behind the sheeting line. These are cut off to exact grade and capped with a 9-18-in. continuous timber to spot accurately the lower flange of the batter piles.

Batter piles 32 to 47 ft. long, with webs vertical, are driven by 9B2 hammer in 60-ft. swinging leads. To keep the pile from slipping out of the leads during handling, it is fastened to the hammer by a 1¼-in. pin made from a high-carbon axle shaft. The pin passes through a hole in the pile web and over rods extending between adjacent legs projecting down from the hammer. Thus, with one line to the leads and one to the hammer and pile, a single crane handles, spots and drives the batter piles. The holding pin is pulled out by tagline to free the pile after driving is started.

Batter pile connection

The connection between batter piles and waler is a T section made by splitting and cutting a 16-in. WF beam. The pile is cut off vertically at the line of the rear of the waler, and its top flange is slotted to receive the stem of the T. The stem is held to the pile web with three 1-in. bolts, and is welded to the flanges. In the original design the stem extended through a slot in the lower flange, calling for an overhead weld beneath the solid upper flange. By changing the slot to the upper flange and leaving the lower one solid, the contractor makes all welds downhand. Four 1-in. bolts hold the waler to the T.

Sheetpiling is driven two sheets at a time with a heavier 9B3 hammer in swinging leads. Flared driving pants of 1¼-in. steel plate, riveted to the hammer legs, hold the hammer on the pair of piles. After driving, alternate sheets are bolted to the waler to tie the structure together.

A riprap toe completes the breakwater. Stone as large as 2 tons is floated on deck scows to the face of the wall and pushed into the water by a small 4-wheel-drive auto carrying a bulldozer blade. This is also a money-saver, for it replaces a high-priced crane.

Despite a great amount of unusually rough weather that stopped operations from floating equipment, the breakwater job will be finished within a 6-mo. schedule. And as much as 80 ft. of breakwater has been sheeted in one shift.

Builder and owner

Contractor for the breakwater, estimated to cost a half-million dollars, is N. S. Mackie Co., Chicago. Brent Coppens is general superintendent; Mike Sojka is engineer. For Northern Indiana Public Service Co., John Fevling is resident engineer and F. L. Reinmann is manager of electrical production at the Michigan City station.

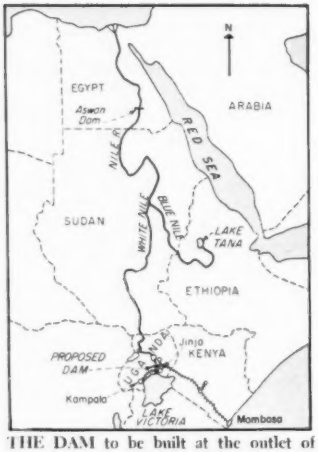
A POWER PLANT of 150,000 kw. is to be the major element of the Owens Falls project at the outlet of Lake Victoria in Africa.

Contract Let for Hydro Plant At Headwaters of the Nile River

McGraw-Hill World News Bureau

AN EARLY START on the long-discussed scheme for developing power at the headwaters of the Nile River in Africa was assured late in September when C. R. Westlake, chairman of the Uganda Electricity Board, announced that a contract for construction of a dam and power plant at the outlet of Lake Victoria had been let to a syndicate headed by Christiani & Nielsen, Ltd. (the British branch of an international engineering and construction firm.)

This contract was for £3,639,540, or about $14.5 million at the pre-devaluation exchange rate. Contracts totaling £2,500,000 and covering the hydraulic and electrical equipment for the project had been let previously to firms in England and Scotland. The turbines are to be built in the United Kingdom, but to Swedish designs. Total cost of the project, other than compensation devoted to meeting certain Egyptian requirements, will be nearly £11,000,000.



THE DAM to be built at the outlet of Lake Victoria for power will also store water for control of the White Nile.

The dam is to be built about two miles down the White Nile River from Lake Victoria at Owen Falls, where a head ranging from 57.5 ft. to 72.5 ft. can be developed. It will be of concrete and stone masonry, 2,725 ft. long and 85 ft. high. A power plant with space for ten generators of 15,000 kw. each is to be built immediately below the dam, about midstream. Four of the generators are to be installed initially. Each turbine will be 15 ft. in diameter and will require about 3,600 cfs. of water.

Because of the large area of the lake, no free overall spillway is to be provided at the dam. However, there are to be six control sluices through the base of the structure, each 3 meters wide and 5.1 meters high. With

all six sluices open, 45,000 cfs. can be discharged, which is 2,000 cfs. more than the maximum recorded flow at the outlet of Lake Victoria. The average outflow from the lake in the 48 years of record is 22,000 cfs.

Large amount of storage

Lake Victoria has an area of 26,000 sq. mi. As it is proposed to raise the surface one meter by the construction of the dam at Owen Falls, a storage capacity of about 56,000,000 acre-ft. will be provided for power and river control. And as the Egyptian government is interested in better control of flow in the Nile, it has agreed to contribute £100,000 toward cost of the dam and £4,000,000 toward compensation of landowners and owners of waterfront structures affected by the proposed change in lake level. It also will make an annual payment to the Uganda Electricity Board.

If the level of the lake was to be raised for complete regulation for power purposes alone, an increase in level of only 15 in. would be required.

Low unit cost

The principal advantage of the Owen Falls project is that it provides power at a relatively low cost in a region having neither coal nor oil. The unit costs are expected to be about £73 per kw., as compared to £100 for similar schemes in Britain.

Power is expected to be used for industrial development in Uganda. A cement mill is being planned, and consideration is being given to the construction of a steel mill using ore which is within a reasonable distance.

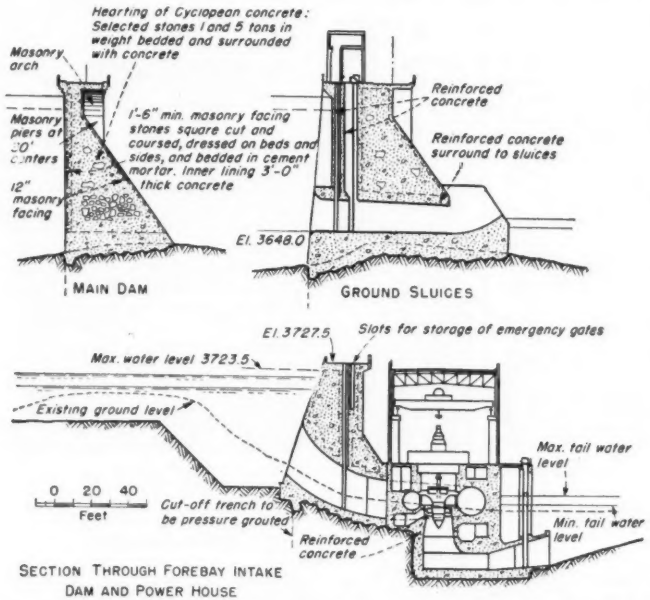
Construction of the dam is expected to start almost immediately, and four years is specified as the completion time. The first power will be delivered in 1953.

An access road to link the site with the existing road from Jinja to Kampala already has been constructed and is available to the contractors. An access railway to the site will be laid by the Uganda Railway Co., partly over a fill to be built as part of this contract. This railway links Jinja with the nearest port for ocean-going vessels, Mombasa, a distance of 600 miles.

Raising the lake level one meter will submerge the existing highway across the river to above the level of the bridge floor. Consequently, the road is to be relocated to pass over the dam. A 20-ft. roadway and a 5-ft. footpath are to be provided on top of the dam for this purpose.

The syndicate holding the construction contract is made up of four British and four Dutch firms. The British firms, in addition to Christiani & Nielsen, are Dorman Long & Co., Edmund Nutall, Sons & Co., and J. L. Kier & Co. Since the war, the same group of firms has been engaged in the reconstruction of harbors in Holland damaged during the fighting. It is expected that a subsidiary will be set up in Uganda to direct the work there.

Consulting engineers are Kennedy & Donkin and Sir Alexander Gibb & Partners, both of London.


Hearting of Cyclopean concrete: Selected stones 1 and 5 tons in weight bedded and surrounded with concrete
Masonry arch
Masonry piers at 20' centers
12" masonry facing
1'-6" min. masonry facing stones square cut and coursed, dressed on beds and sides, and bedded in cement mortar. Inner lining 3'-0" thick concrete
Reinforced concrete
Reinforced concrete surround to sluices
El. 3648.0
MAIN DAM
GROUND SLUICES
El. 3727.5
Slots for storage of emergency gates
Max. water level 3723.5
Existing ground level
Max. tail water level
0 20 40
Feet
Cut-off trench to be pressure grouted
Min. tail water level
Reinforced concrete
SECTION THROUGH FOREBAY INTAKE DAM AND POWER HOUSE

TYPICAL SECTIONS through the proposed dam and power plant. There is to be no free-overfall spillway due to the vast storage area behind the dam. Water needed for river control will be discharged through the sluice gates.

Study methods of keeping logs out of power intakes

In an attempt to aid power companies to solve the problem of stray pulpwood logs that pass under booms and enter power plant canals, the Canadian government has initiated model studies of the matter.

The National Research Council of Canada has built hydraulic models which enable tests to be conducted under controlled conditions, at only a small fraction of the cost of full-scale trials.

A one-hundredth scale model of a powerplant, typical of a number of plants in that the entrances to the power canal and log chute are adjacent to each other at one end of the control dam, has been constructed.

Miniature logs are handled in the model in a manner similar to the method used with large logs at the power site and the same difficulties are experienced in preventing water-soaked logs from passing beneath the guard booms.

A number of tests have been conducted to study the effect of the position of the entrance to the log chute relative to the entrance to the power canal. In early design stages for new power plants, provision must be made for handling logs, and information on the relative merits of different locations of the log chute is of great value to the industry.

A number of guard booms have been tested at different depths of immersion. Increasing the immersed area has been shown to be beneficial, but beyond a certain depth the downward current induced by the boom has a harmful effect. The correct location of booms is important in preventing the formation of large log jams which may be difficult to remove. A guard boom with a submerged sloping screen has been found to have certain advantages and tests are in progress on a larger model to determine the best size of screen, slope and immersion to give adequate protection consistent with economy of construction and ease in handling.

FIELD AND OFFICE

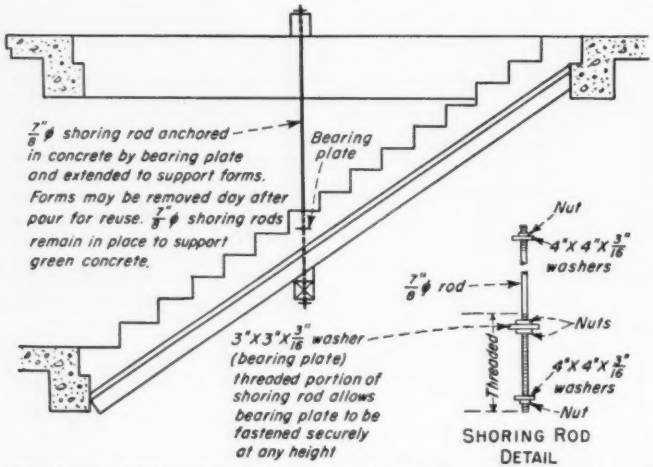
CRANE AS SNOW PLOW. A motor crane need not get locked up in the garage when the regular road construction and maintenance season ends. This very versatile rubber-tire crane is quickly converted into a snow plow to become a year 'round performer. With the great tractive power of its 6-wheel drive, it can handle most snow removal jobs. A wide variety of types of snow plows may be attached to the front end of the crane as easily as on any truck. It has highway speeds up to 30 mph, and its rubber-tire mobility enables it to speed quickly to snow-bound roads for prompt action.

"Shoring Rods" Allow Early Form Stripping

New method of supporting concrete soon after it is poured allows early stripping of wood forms. This reduces total square footage of forms needed for job, which will result in important cost cutting.

The setup consists of steel rods, called "shoring rods", hung from supporting members. The rods first support the wood worms during pouring and then take the concrete load, through bearing plates anchored to the rods in the concrete. By this means, the wood forms can be stripped right after the initial set of the concrete (in about a day) and re-used quickly.

Supporting wood forms on suspended rods is standard practice, but if early stripping is desired (and it usually is) small sections of the forms must be left in place. The new shoring rod design takes the load on separate bearing plates imbedded in the slab itself, permitting the entire form to be removed as a unit.—J. R. O'Donnell, 59-30 54th St., Maspeth, N. Y.

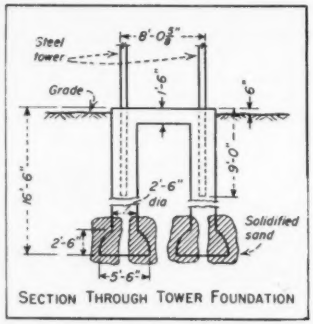

7/8" ϕ shoring rod anchored in concrete by bearing plate and extended to support forms. Forms may be removed day after pour for reuse. 7/8" ϕ shoring rods remain in place to support green concrete.
Bearing plate
Nut
4"X 4"X 3/16" washers
7/8" ϕ rod
Nuts
3"X3"X3/16" washer (bearing plate) threaded portion of shoring rod allows bearing plate to be fastened securely at any height
Threaded
4"X 4"X 3/16" washers
Nut
SHORING ROD DETAIL

TYPICAL SHORING ROD installation on stair concrete, with detail of anchorage.

Footings Dug Without Shoring In Chemically Solidified Sand

Another application of the use of chemicals to solidify foundation soil was made recently when floodlight towers were built at Kezar Stadium, a field built in close quarters and on free-running sand fill in San Francisco's Golden Gate Park.

A sodium-silicate solution was pumped into the ground to permit excavation for bell-shaped pier footings without shoring. This method



avoided extensive tunneling under sidewalks and stadium that would have been necessary with conventional methods and saved the use of an appreciable amount of concrete.

Chemical solidification was accomplished by introducing 500 gal. of solution under 200 psi. pressure for each footing. The solution fills the voids in the soil and cements loose grains together for a period long enough to complete construction. Compressive strength of the solidified sand was about 75 psi. The 30-in. diameter shafts sunk to the footings were big enough to allow workmen to excavate the lower bell-shaped section by hand and also to allow for inspection of the bell after placing of reinforcing steel. A 30-in. casing, used during footing excavation, was removed before placing of concrete. Thomas Bristow, Electrical Engineer, San Francisco Public Utilities Commission, Bureau of Light, Heat and Power.

the "Great Gildersleeve"*

. . . IS BROADMINDED ABOUT READING METERS

Commissioner Gildersleeve tells newly hired Meter Readerettes, "Your job is to make consumers drool . . . so they'll be thirsty . . . so they'll drink more water." He peers at the . . . well, at the efficient Pittsburgh water meter.

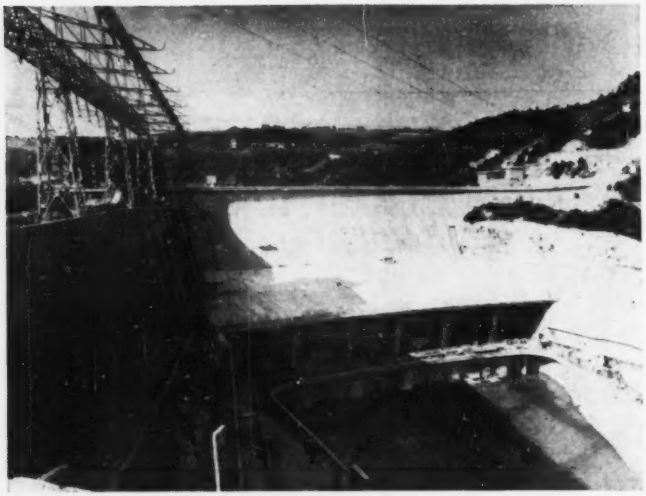
The girls eagerly lap up Gildy's instructions as he says, "Accuracy is our watchword and if you can't be accurate at least be on our side." His explanation is quite clear.

As the Commissioner concludes his instructions on the art of meter reading, the girls' interest and enthusiasm know no bounds. They're ready to read 'em and reap for dear old Summerfield.

Seriously—when you read Pittsburgh-Empire meters, you reap the greater revenue that results from in-built accuracy.

Next month brings high adventure with the girls afield—

DEVELOPMENTS ABROAD



GENISSIAT COMPLETED—France's great hydro project on the upper Rhone River can now be seen in its final form. A unique appearance is accorded by the 2¼ acre roof of the power plant, which resembles a downstream apron. Under construction before, during and since the war, the dam and power plant is a major item in French efforts to increase manufacturing capacity, lessen dependence on coal.

France—Last major construction at Genissiat Dam—completion of the power house roof—adds architectural distinction to Western Europe's largest hydro project, already notable for many technical features (ENR June 24, 1948, vol. p. 1024). Extending entirely across the Rhone River canyon below the dam, the roof suggests a downstream apron more than a cover for the turbines. Besides its unusual appearance the roof is notable for the remarkable lengths to which designers have gone to make it waterproof.

Over the trusses there is first a 10-in. concrete slab, 525 x 220 ft. in plan, divided into seven parts by expansion joints. Over this is placed a special product, known as "Rubamiante," consisting of four layers of asphalt-impregnated asbestos-felt and four layers of low-acidity asphalt, the whole totaling ⅝ in. On top of this is applied, in sequence, 1⅜ in. of fine sand, a waterproof building paper, a 1½-in. layer of porous concrete, a 10-in. protecting slab of lightweight concrete and 1½ in. of air-applied concrete. The whole totals just under two ft. It is interesting to recall that this thickness is only about one-quarter of that originally planned when the dam was under construction during the war and bomb protection was being given what has since been concluded was undue emphasis.

Compagnie Nationale du Rhone, a joint enterprise of governmental units in the valley, is the builder of Genissiat Dam. About 20 percent of the $75 million cost is covered by counterpart funds made possible by U. S. aid through ECA. At present, with four of its 70,000 kw. turbines operating, Genissiat is producing at the rate of 1.8 million kwhr. annually. A fifth turbine will be installed next year and a sixth sometime later. In the meantime, CNR is proceeding with the second step in its Rhone Valley development—construction of the Donzere-Mondragon canal and hydro plant, about 100 miles south of Lyon. This project will add 2 billion kwhr. to France's power production by 1951.

Plan 167-mi. canal to bypass Orinoco mouth

Venezuela—A canal 167 miles long to connect the Caribbean Sea and the Orinoco River—virtually bisecting the northern part of the country between a point halfway along the half-moon course of the Orinoco and the village of Unare (100 miles east of LaGuaira) is now being planned. Preparation of preliminary plans will start immediately at a cost of $1,800,000. Indications are that the complete project will cost between $150,000,000 and $270,000,000, take ten years, and will open up for development some two and one-half million acres of land.

The project, which will change the geography of Venezuela, is said to be one of the most ambitious projects ever undertaken in South America, and is considered locally as second only to the Panama Canal in world-wide engineering significance. The canal, which will follow natural watercourses where possible including the Zuata, Ipite and Unare Rivers, will pass through the heart of the llanos and should do much to develop that virgin agricultural section.

A hydroelectric project also

Preliminary thinking likewise calls for a hydroelectric project at Zaraza, with a potential output of 150,000 kw. which is equivalent to 75 percent of the present available power in the entire country.

In describing this project, Manual R. Egana, Minister of Development, said that his ministry and the Venezuelan Development Corporation, a government subsidized organization, had retained Cia. Riego, consulting engineers of Caracas, to make the study. Aiding will be the Swedish engineering firm of Volten Byqransbyron, of Stockholm, whose representatives have been in Venezuela for the last two months. Their engineers are specialists in hydraulic engineering, and have made studies of a similar nature in France, Russia, Germany and Persia. The minister also said that U.S. engineers and technicians may also be called into consultation.

To develop agriculture

The canal will not only develop farming country through irrigation, but will serve as a cheap method of transportation to and from the interior. It also will aid flood control of the Orinoco which annually overflows its banks causing millions of dollars of damage.

The maximum altitude over the projected route is 195 ft. above sea level. This undoubtedly will call for a series of locks, probably at Zaraza, site of the hydroelectric development. The canal will be 32½ ft. deep from the Caribbean to Zaraza, allowing ocean going vessels to reach that far. From there to the Orinoco it will be 13 ft. deep. The financing of the canal, which will be the largest construction project ever undertaken by oil-rich Venezuela, will also be a prime objective of the three year study now under way.

(*Continued on page 51*)

Housing

Puerto Rico—The Puerto Rico Planning Board has submitted a report to Governor Luis Munoz Marin covering the construction of 9,000 dwelling units to cost $4000 each, under the terms of the new Public Housing Act, to be financed with FHA funds. The program will cost approximately $36,000,000. Planning officials conducted a survey of private housing needs, covering number of houses constructed during the fiscal years 1946-47-49 in 18 of the 77 municipalities on the island. The report indicates that 9,250 dwelling units were built during the last three fiscal years, of which 4,657 units were valued at $2,000 to $3,000 —including the 4,426 units of great Puerto Nuevo project, at a total cost of $2,560 for each unit.

Rafael Pico, chairman of the planning board, said that according to this survey, the 9,000 new units could be purchased by families with an annual income of from $3,200 to $4,000. Cost of each lot would represent 20 to 25 percent of the total investment. He added that the survey indicates that there are 112,711 dwelling units in the 18 municipalities investigated. Of these houses, 5,757 are valued at $4,000 and upwards, and the great majority much less than that.

This survey of housing needs will serve as a basis for a request of allocation of federal funds to finance a vast private housing development plan. However, several private construction firms, such as Long Construction, Fullana Construction, and Kelly are interested in private construction plans in Puerto Rico, and several of them have submitted preliminary construction plans of low-cost housing to the consideration of government authorities.

Airports

India—Sagging federal finances have forced a multi-million dollar cutback in grandiose Indian airport construction and development plans. New construction projects have been almost wiped out and improvement programs cut to the bone. At Bombay's Santa Cruz Airport alone more than $3,000,000 in extension works has been dropped and the construction of a $1,000,000 terminal building postponed. In general, runway widening and strengthening projects are the only works unaffected.

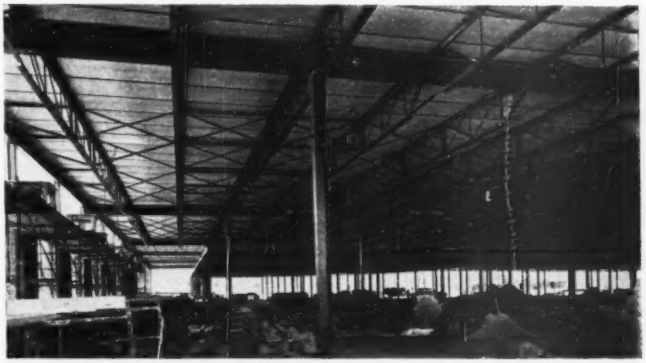
Mexico—Plans for a bigger and better airport at Tuxtla Gutierrez, capital of Chiapas State, southern Mexico, are being made by the three aviation companies needing such a port, the Cia. Mexicana de Aviacion (Pan American World Airways agent in Mexico), for domestic and international service.

TYPICAL EXAMPLE:

Speed of Building with O'Neal Steel

The John Deere Plow Company needed a plant built in Atlanta—had to have 60,000 square feet in a big rush.

Our fabrication, plus economical design, and efficient planning by the general contractors, brought the result: From breaking ground to completion of the roof within 60 days.



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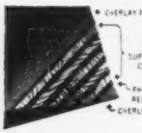
Trade Mark Registered. Patents 2,150,697—2,150,698—2,150,841 and 2,343,760

The Superior Multiple Re-Use Concrete Form Panel

4 Star Features make Harborite Your Best Selection!

Harborite brings you top concrete form performance! Phenolic-type resin-impregnated overlays for smoother, longer, better performance, and a core of genuine SUPER-Harbord give you all these advantages—

1. Check-free, durable overlay surfaces which result in desirable, easily-finished concrete surfaces.
2. Scientifically, exclusively designed and manufactured by Harbor, Harborite's tough, serviceable, abrasion-resistant overlay has a "tooth" that holds oil, sealers or lacquers . . . has an absorptive liner effect that reduces pit voids.
3. *Harborite's* distinctive reddish-brown color is permanent—will not bleed or discolor concrete . . . reduces finishing problems.
4. You get maximum panel re-use at the lowest cost-per-foot-per-use.



Demand Harborite for really re-usable panels, for incomparable concrete form work, for definite savings in concrete form work.

And for other concrete form job requirements, Harbor offers three more star performers, all backed by Harbor's name and Harbor's reputation—

★★★

SUPER-Harbord PLYCRETE—Grade-marked: EXT • DFPA • AA. For multiple re-use form work. Hot-press-bonded with phenol-type resin adhesive. ALL veneer jointed. All open defects in crossbands repaired. Re-humidified after pressing. Sanded smooth both sides. Edge-sealing and oiling optional.

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Harbord PLYCRETE—Grade-marked: INTERIOR • AA • DFPA. Harbord PLYCRETE has the same veneer faces as SUPER-Harbord Plycrete, but is bonded with 10-cycle moisture-resistant glues instead of water-proof adhesives. Sanded smooth both faces. Will withstand many re-uses. Factory edge-sealing and oiling optional.

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Harbor PLYFORM—Grade-marked: PLYFORM • DFPA • BB. Bonded with water-resistant 10-cycle glues (not waterproof). Both faces are BB (solid) veneer, free from open defects. Sanded smooth. Factory edge-sealing and oiling optional.

For information concerning Harborite and other Harbor Concrete Form Panels, contact:

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and the Servicios Aeros de Chiapas, S. A., and the Cia. Tabasquena de Aviacion, for local service.

Panama—The new administration building at the $8,000,000 Tocumen National Airport is half finished. The top half, that is. The bottom two floors of the four-story structure are still skeletal, waiting for some manana when the Republic of Panama has a little more money, says the Newspaper Enterprise Association.

Model Town

British West Indies—A model town which will be of the latest British tropical building techniques, is planned for Castries, capital of Saint Lucia in the Windward Islands.

The old town was largely destroyed by fire in 1948 and new structures of steel and concrete will arise out of the ashes of the fire, which did $8,000,000 worth of damage and made 400 families homeless.

The rebuilding plan covers restoration of services, road repairs, water and sewage schemes. A housing plan will provide modern dwellings, for the inhabitants, and new government offices will be erected.

It is anticipated that the rebuilding will take two years and cost several million dollars.

Electrification

India—A $12,000,000 project for electrification of the central provinces of India is nearing completion. It is expected that electricity from the power station near Nagpur will be available next April. It will generate 11,000 volts, but output eventually is expected to reach 66,000 volts.

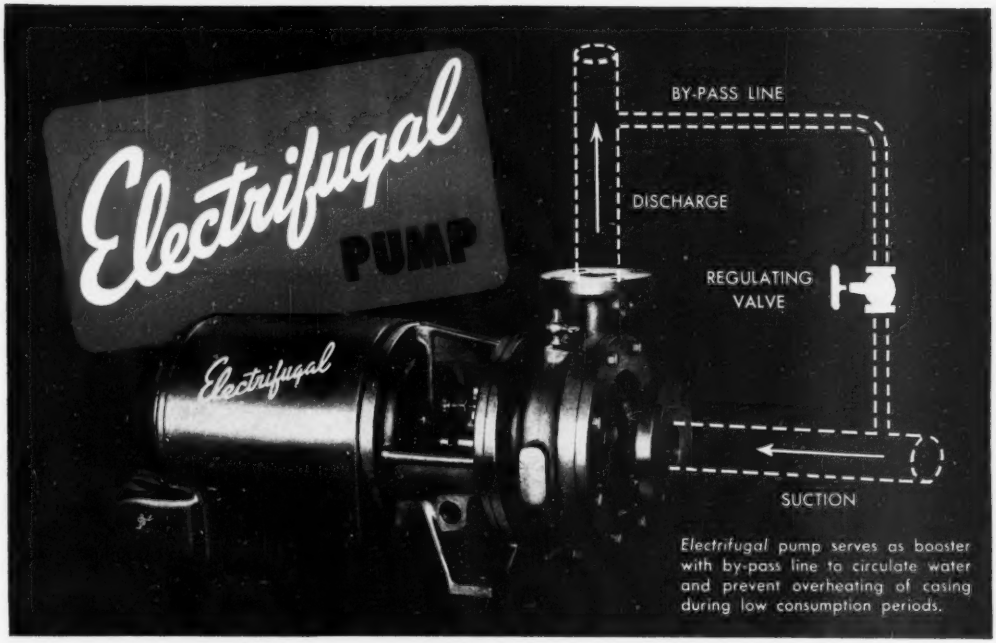
Water Supply

India—J. B. Justin and E. B. Burwell, of Justin & Courtney, Philadelphia consulting engineers, have arrived in Bombay to advise the municipal government on the construction of the $9,450,000 Vaitarna dam and water supply system. The project will boost Bombay's water supply by 130 million Imp. gals. a day.

World Power Conference Planned in London in July

The next World Power Conference is scheduled to be held in London July 10-15, 1950. Copies of a statement with respect to plans for this conference may be obtained from William N. Carey, secretary, Engineers Joint Council, 33 West 39th St., New York 18, N. Y.

The last World Power Conference was held in Washington in 1936.



Electrifugal pump serves as booster with by-pass line to circulate water and prevent overheating of casing during low consumption periods.

Boost Pressures

ON UNDERSIZE MUNICIPAL PIPE LINES!

- ***Electrifugal pumps do the job dependably and inexpensively***
- ***You escape heavy construction costs of replacing old lines***
- ***Complaints from users in low pressure areas are eliminated***

EXPANDING residential areas often suffer from low water pressures due to undersize pipe lines. Replacement means interrupted service and costly construction. An alternate solution — used by many cities — is to install *Electrifugal* pumps as boosters.

In an outlying district of one city, up to 50 homes are serviced on a two-inch line using the method diagramed above. The *Electrifugal* pump constantly maintained normal pressure during both high and low consumption periods.

Because the cast iron yoke and bracket for mounting are designed as a single piece, separate adapters are eliminated. And because motor and pump are on a single shaft, perfect alignment is assured and maintenance costs are negligible.

Your nearest A-C representative would be glad to discuss your pumping problems. Why not call him? For more details, send the coupon today.

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☐ **Please have an Allis-Chalmers representative call.**

☐ **Please send me bulletin 52B6059E, *"Electrifugal Pumps".***

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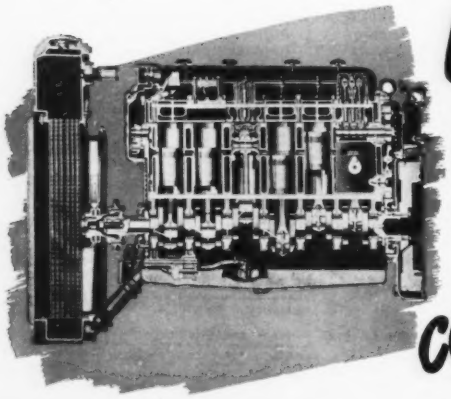
Do Your PISTON ...LOOK LIKE THIS?

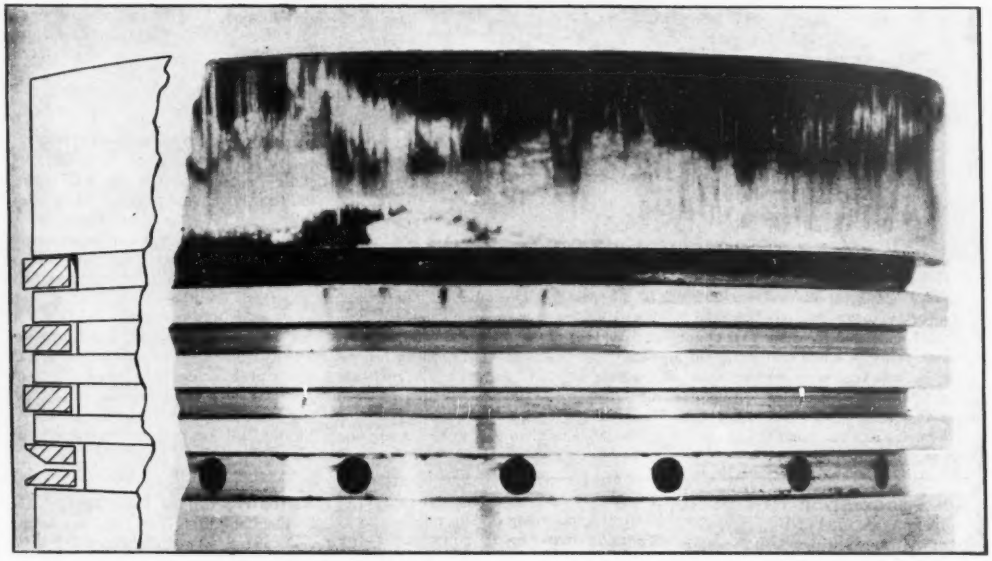
WITH REGULAR HEAVY DUTY OIL—This photo of an actual piston shows a typical example of what happens to piston ring grooves under **SEVERE DUTY** service when regular Heavy Duty 2-104B motor oil is used. The drawing helps to clarify the condition shown in the unretouched photograph. Note the heavy deposits that coat all surfaces.



NEW SINCLAIR SUPER TENOL CUTS MAINTENANCE COSTS IN SEVERE DUTY SERVICE

RING GROOVES

...OR LIKE THIS?



WITH NEW SUPER TENOL— This unretouched photo and drawing show how new Sinclair SUPER TENOL, in the same type of SEVERE DUTY service, cleaned out all but a small portion of the deposits shown at left. SUPER TENOL also quickly relieves valve sticking conditions, safely removes accumulated sludge and varnish deposits.

New, Sinclair SUPER TENOL has been specially developed to eliminate the high maintenance costs so frequently encountered in both types of SEVERE DUTY service:—1. High temperature, high speed, overload; and 2. Low temperature, light load, long idle, stop-and-go.

If you operate diesel-powered or gasoline equipment in either type of SEVERE DUTY service it will pay you to begin using new SUPER TENOL now—to keep equipment in operation many more days each year, to save time, labor and money.

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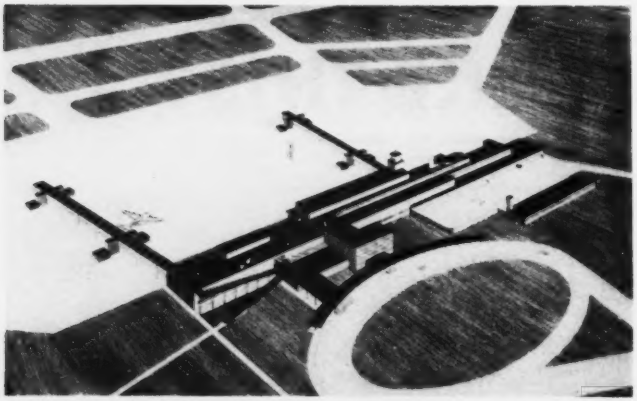


INTERNATIONAL AIRPORT—Construction bids for the new terminal of the International Airport at Philadelphia, Pa. will be advertised in December. A "finger tip" type of building, shown here in the architects' black and white rendering, has been decided upon, and the design has been approved by the airline operators. The "fingers" are the passenger ramps that extend out from the main building. Mayor Samuel believes that an adequate and efficient terminal building can now be built for less than $5,000,000. A parking area will accommodate 2,500 cars. The site has been prepared by a $1,600,000 grading and fill contract. The building will rise to the south of Essington Ave., with the main entrance opposite 92nd Street. Carroll, Grisdale & Van Allen have been retained as architects.

Re-organization In Berkeley

The city council of Berkeley, Calif., recently approved a measure reducing the number of departments administered by the city manager from 19 to 10. This reorganization is based in part on an administrative survey made by Public Administration Service.

In a report to the council, the city manager said that the reorganization would combine related functions into logical departments; provide adequate coordination and control of each function; result in smoother and more efficient operations; provide a more flexible organization that can, by shifts within departments, meet changing conditions; permit more efficient use of personnel and equipment and eliminate duplications; reduce overlapping jurisdictions and responsibility among departments; and reduce the detailed departmental coordination previously required of the city manager.

The new consolidated finance department now includes functions formerly performed by the independent departments of assessor, clerk, purchasing and budget, and treasurer. The expanded public works department continues its functions of engineering, traffic engineering, streets and sewers and harbor, but in addition now performs the work of the former building inspection and electrical departments. The newly-created service department consolidates the departmental functions of building maintenance, equipment maintenance and refuse collection. The health department absorbed the former community welfare office. One department, the veterans affairs center, was discontinued.

Municipal Water Contract

The first repayment contract negotiated for municipal water under the Missouri basin development plan was signed Sept. 24 in behalf of Dickinson, N. D., after which town the Dickinson Dam is named. For the first five years, the city of Dickinson is to make semi-annual payments of $7,500 each. Subsequent semi-annual payments will be increased gradually at five-year intervals until they reach $16,250 during the last five years of the repayment plan.

To meet these obligations, the Dickinson city commissioners are empowered to provide assessments from water revenues and, if these are insufficient, to levy taxes.

Under the contract, Dickinson will have priority rights for 359,000,000 gallons of water annually from the dam, now being built by the Bureau of Reclamation on the Heart River about two miles west of Dickinson at an estimated cost of $1,034,071.

Binghamton's Water Supply—Grover E. Rickard, superintendent of the Water Bureau of Binghamton, N. Y., has proposed a three-year, $1,775,094 program of modernizing the city's water supply facilities. The superintendent warned that this is imperative because of the growing inadequacy of the present system and the threat of a breakdown of obsolete equipment. The plan includes $350,000 for three new reservoirs.

New Orleans Face-lifting

Mayor Morrison of New Orleans, La., has outlined the city's $55,000,000 improvement program to be completed by 1954. It is to include: $15,000,000 for street improvements; $15,000,000 for grade-crossing elimination, $18,000,000 for union station program; $5,000,000 for water and drainage improvements; $1,000,000 for the civic center site; $1,000,000 for recreation, library and fire station construction. By the end of the year, the mayor said, the total of street paving contracts will have exceeded $9,000,000 for work on 661 streets in all sections of the city.

Building Code News

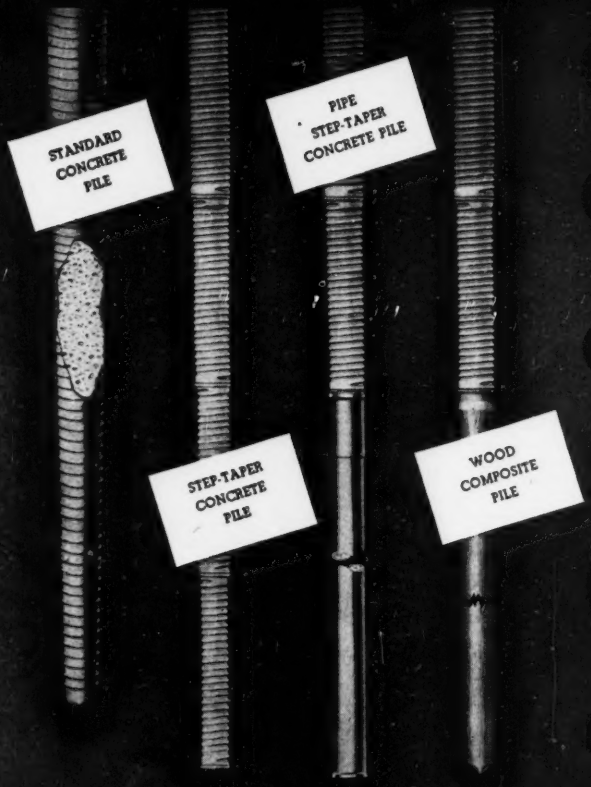
The building code committee of Milwaukee, Wis., has invited the press to sit in on its meetings, but the "Journal" of that city says that this was done only after the city attorney's office ruled that newspaper reporters would not be barred.

At Akron, Ohio, the enactment of a new code was temporarily delayed by a difference of opinion as to whether use of clay pipe should be permitted under a building or within 10 ft. of it. The city's building department has insisted that the use of clay soil pipe be forbidden, but others contend that it is all right if it meets standards for adequate performance. Another section of the code which forbids the construction of bill boards across from public buildings, parks and schools was attacked as discriminatory.

The trustees of Springfield Township, near Toledo, Ohio, have certified to the board of elections a zoning resolution that is unique among township zoning plans in Ohio. If the resolution is adopted by voters in the November election, it will limit future home construction in the township to houses of 7,000 cu. ft. or more, equal to a 24 by 30 ft. one-story house.

(*Continued on page 59*)

OUTSTANDING ADVANTAGES OF RAYMOND CONCRETE PILES



Raymond's successful experience for more than a half century has thoroughly proved these six outstanding advantages of Raymond Concrete Piles. These benefits, plus Raymond's expert personnel and specialized equipment, result in sound, dependable substructures that meet every requirement. You are invited to consult our engineers for the facts.

1 **PERMANENCY**

Every Raymond Concrete Pile is a permanent achievement, accomplished by a series of carefully planned steps which assure a safe subsurface support.

2 **GREATER CARRYING CAPACITY**

The use of rugged equipment and heavy hammers permits driving to high carrying capacities, and the soil pressures developed during driving are fully maintained.

3 **UNIFORM BEARING CAPACITY**

Regardless of variations in subsoil conditions, Raymond piles can be driven to any depth required to obtain uniform bearing capacity for the whole foundation.

4 **ENGINEERED FOR THE JOB**

Raymond can provide the type of pile specifically adapted for your job.

5 **SAVING IN CONSTRUCTION COST**

Raymond's long experience on all kinds of jobs, the ready availability of equipment and the relatively shorter lengths of Raymond piles compared to some types, assure genuine economy in foundation costs.

6 **COMPLETE SATISFACTION**

By the satisfactory completion of over 14,000 contracts, involving more than 50 million feet of piling, Raymond has established a world-wide record of achievement.

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52 YEARS FOUNDED 1897 OF PROGRESS

THE SCOPE OF RAYMOND'S ACTIVITIES

Includes every recognized type of pile foundation—concrete, composite, precast, steel, pipe and wood. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements and borings for soil investigation.

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One important reason for this great preference lies in Fruehauf's great variety of Trailer equipment. In addition to standard freight models there are specially built vans for hauling furniture . . . refrigerator models for hauling meats, frozen foods and other perishables . . . a wide line of Tank-Trailers, each designed to carry a specific type of liquid . . . dump Trailers, heavy machinery carriers, livestock Trailers, small city delivery models . . . in short, no matter what the requirements are . . . there's a Fruehauf Trailer designed to do the job efficiently, safely and economically.

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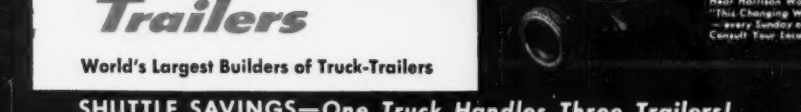


N. Y. Parking Unit

Plans for a $4,000,000 public parking garage have been announced by Mayor O'Dwyer of New York City, who said it would be built, maintained and operated by private capital on city-owned land under a 50-year lease, and that it would cost the city's taxpayers nothing.

The structure would house 850 cars and occupy two-thirds of the city block bounded by Second and Third Aves. and East 64th and 65th Streets. It is said that the lessee eventually will be the New York Life Insurance Co.

Buffalo Ship Canals

New ship canals which would rehabilitate the Buffalo River as a great inland waterway for industry were urged Sept. 22 at a U. S. Army Engineers hearing on the redevelopment of Buffalo harbor.

One canal, 1½ miles long, would connect the Union Canal, near the Fuhrmann Blvd. city line with the Buffalo River. The other would cut through lowlands near the Merchants Refrigeration Co. plant to provide a new entrance to the river.

Each of the canals was proposed by a different group. Presumably, only one would be built, assuming final approval.

The longer canal, which would involve the building of new lift bridges, was proposed in engineering sketches presented by the Buffalo & Erie County Planning Association.

The shorter canal which would enable lake freighters to get up the river without negotiating the hazardous hairpin turn at the Ohio St. bridge—was the suggestion of the City Planning Commission.

Col. Frank H. Forney, district engineer of the U. S. Corps of Engineers, and his staff conducted the inquiry.

Pollution Hearings

Hearings on the sanitary status of the Niagara River, described as one of the most seriously polluted streams in the country, will be conducted by the International Joint Commission on Nov. 15-16 in Buffalo, N. Y., and on Nov. 17 in Niagara Falls, Ont.

Jesse B. Ellison, secretary, said the commission is seeking to rid the stream of industrial and sewage wastes which are a menace to the health standards of communities on both sides of the border.

The hearings will be public and all parties having an interest in cleaning up the stream will be invited. Along the Niagara frontier, a scientific study of Niagara River pollution has already been in progress for more than a year by a technical committee.

Urge James River work to help port of Richmond

A movement is on foot to widen the channel of the James River in Virginia to 300 ft. and to deepen it to 35 ft. all the way, if possible, from Richmond to the sea—104 miles. The purpose is to revive the once busy port by making it possible for larger vessels to reach Richmond.

Last week Col. George T. Derby, district Army engineer for the Richmond and Norfolk area, held a hearing, ordered by the government, to determine whether or not the channel-deepening project would repay the government the millions of dollars it would cost.

All witnesses agreed that the project would pay. It was intimated that freight-rate savings of $1,600,000 could be realized in five years if the big ships could come upriver without having to transfer their commodities to storage in Norfolk and thence to barges and smaller craft.

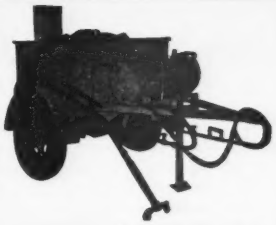
The chief of engineers for the Army would review the findings of Colonel Derby, and if a favorable opinion is sustained an extensive survey of the project would be authorized.

Buffalo Studies Parking

A six-point program for study, recommendation or activation to relieve parking congestion in Buffalo, N. Y., has been submitted to the Off-Street Parking Committee of the Main Street Association by its technical advisory group.

The six points are:

1. Make permanent what exists by selecting the essential parking lots; buying and leasing land where necessary; financing multi-deck facilities with tax moratoriums for 5 years on improvements only; and using Washington Market for a parking and transit terminal.
2. Organization of a special committee of city officials, businessmen and property owners to consider parking authority made possible by New York State legislation.
3. Preparation for future parking demands.
4. Zoning ordinances requiring minimum off-street loading and parking facilities by 1955.
5. Rechecking, from time to time, possible fringe parking facilities with transit shuttle service, as they relate to N. Y. State Thruway developments.
6. Maximum utilization of major traffic thoroughfares; possibly the one-way and "no-standing" technique.



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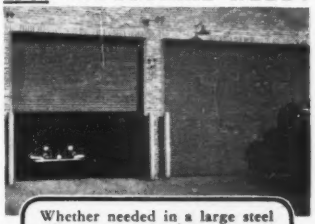

Whether needed in a large steel mill . . . or simply at a small warehouse loading-platform . . . KINNEAR can supply steel rolling doors to fit any requirement. These steel interlocking-slat curtains rise straight up and coil compactly above the lintel! And when shut they supply extra protection against fire, theft and the elements. Available with push-button motor operation from one or several strategic points. Write for details.

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MEN AND JOBS

T. C. Forrest, Jr., consulting engineer, has announced the association of James A. Cotton, formerly engineer in charge, Ft. Worth sub-office, Corps of engineers, U. S. Army, under the name of Forrest and Cotton, consulting engineers, Praetorian Bldg., Dallas, Tex. The firm will specialize in civil engineering, including municipal, reclamation, drainage, irrigation, water supply and treatment, flood control, water conservation, airport development, and industrial planning.

Harry B. Corlett has been appointed San Francisco district engineer for the American Institute of Steel Construction, Inc. He succeeds William H. Popert, resigned, as northern California and Nevada representative. Mr. Corlett, a civil engineer graduate of the University of California, was with Ellison & King, structural engineers, and he has also been with American Bridge Co. and Leonard Engineering Co. Prior to the war, he was assistant to Chief Engineer of Contractors, Pacific Naval Air Bases. Acme Photo.

George Erganian, a member of the engineering staff of the Indiana State Board of Health for two years, has been promoted to chief of the sewage and refuse disposal section of the Division of Sanitary engineering. He replaces Paul W. Reed, now with the water pollution abatement program of the U. S. Public Health Service in the Great Lakes and upper Mississippi Valley basin area.

Francis Robert O'Brien has been appointed head of the engineering division of Southern Research Institute, Birmingham, Ala. He received his engineering training at the U. S. Naval Academy and Texas A & M College, and most recently was director of the engineering experiment station, University of Alabama, Tuscaloosa.

Dr. Herman G. Baity, head of the graduate department of sanitary engineering, School of Public Health, the University of North Carolina, is making a study of the sewage disposal problems of the city of Montevideo, Uruguay. Assisting him are Uruguayan engineers who received their training under him at the University of North Carolina.

John D. Faulkner, assistant chief of the engineering section of the Health and Sanitation division of the Institute of Inter-American Affairs, has accepted a commission with the Regular Corps of the U. S. Public Health Service.

Appointment of **Willard A. Swartz**, of Scranton, as a junior sanitary engineer for the Pennsylvania Department of Health has been announced.

Charles Eliot, of the Delaware County, Ohio, engineering staff, has been named deputy county engineer pending appointment of a successor to the late Ray Watson.

Leo Louis, Jr., Piqua, Ohio, city engineer since February, 1947, has resigned to become water works superintendent at Cedar Rapids, Iowa.

A. A. Baustian, construction engineer of the Iowa Highway Commission, has resigned to go with Chas. M. Young of Waterloo in the bonding and insurance business. He had been with the commission for 32 years, and served as assistant and district engineer. **C. L. Gleason**, district engineer in the Ames office, will succeed Mr. Baustian, and **W. W. Wickham** will take Mr. Gleasons' place.

John T. Smoody, formerly engineer in the pipeline department of Stolte, Inc., Oakland, Calif., has bought the Hammatt Sand & Gravel Co. of Modesta, Calif., to form the Modesto Sand and Gravel Co. Inc.

John T. Briscoe, Jr., of Monroe, Ga., has been named to succeed Joel W. Butts as superintendent of the City Water and Light Department. Mr. Briscoe retires after serving the city for 44 years.

Henry O. Pond, of the H. K. Ferguson Co., engineers and builders, is re-entering the private practice of consulting engineering. He will still be a consultant for Ferguson.

H. B. Kitchen, Watsonville, Calif., city engineer, will retire Jan. 1 after 40 years of service as a public official. He went to Watsonville immediately after his graduation from the University of California. He will be succeeded by **Roy Fowle**, a civil engineer who studied at Ohio State University and the California Institute of Technology.

Walter J. Ryan, consulting civil engineer of Tacoma, Wash., is in New Zealand on an assignment with the division of forestry of the New Zealand government.

(*Continued on page 62*)

Ray Lawson, governor of Ontario, pushes lever to start first pile driver on rapid transit subway construction at Toronto, Ont. Behind him is Ben Pupplo, master mechanic of Arthur A. Johnson Corp., New York, in charge of mechanical equipment on job being handled by Canadian-American syndicate, Pitts-Johnson-Drake & Perini. Canada Pictures.

Collaborating on the finishing touches to a 1.7-mi., $3,000,000 contract on the Willow Freeway in Cleveland, Ohio, are left to right, Carl Heinzerling, superintendent of construction; C. E. Scott, project engineer for the Ohio Department of Highways; and T. W. Kinnear, assistant chief engineer for the Horvitz Co., contractors on the work.

TELSMITH

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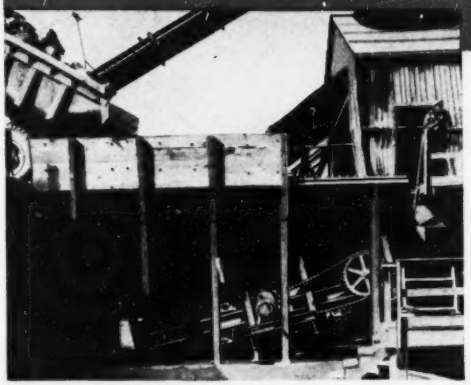

NEW ENTERPRISE STONE & LIME CO., ASHCOM, PA.—36-in. x 10-ft. Telsmith Heavy Duty Apron Feeder takes 15-ton loads; feeds a 25-B Telsmith Primary Crusher.

● Keep your conveyors, screens and crushers working smoothly and at full capacity. Telsmith Apron or Plate Feeders insure steady, uniformly regulated flow of material to entire plant—boost your output and cut cost of up-keep.

APRON FEEDERS are self-contained units on heavy structural steel frames. **Heavy-Duty Apron Feeders**—with carbon, or manganese steel flights—handle the toughest jobs, such as feeding primary crushers, either jaw or gyratory. **Standard-Duty Apron Feeders**—equally sturdy, but weigh less. Apron Feeders are made in 24-in. to 72-in. widths, with capacities from 25 to 700 tons per hour. Furnished with heavy steel hoppers, at extra cost.

PLATE FEEDERS are simple in design—sturdy in construction. Adjustable stroke regulates capacity. Made in both Standard and Heavy-Duty models; widths 16-in. to 48-in.; capacities 12 to 400 cu. yds. per hr.

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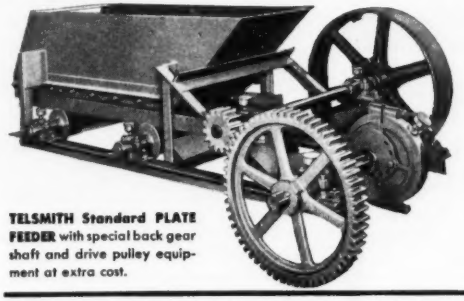
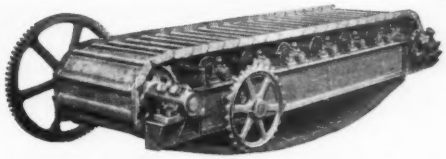


TELSMITH Standard PLATE FEEDER with special back gear shaft and drive pulley equipment at extra cost.



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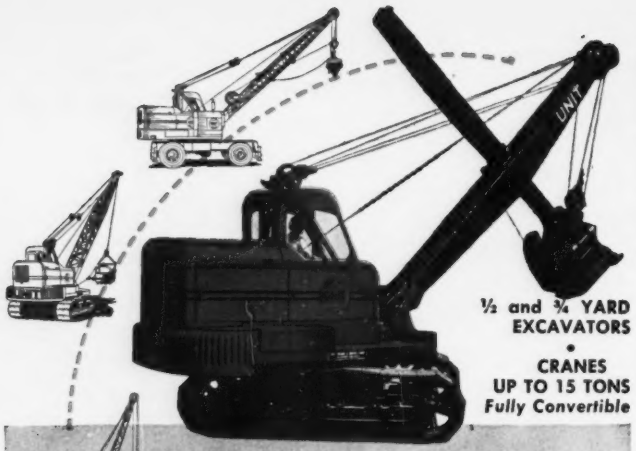

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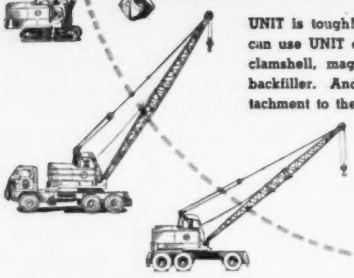

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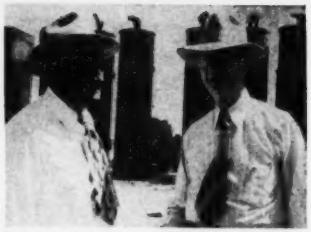


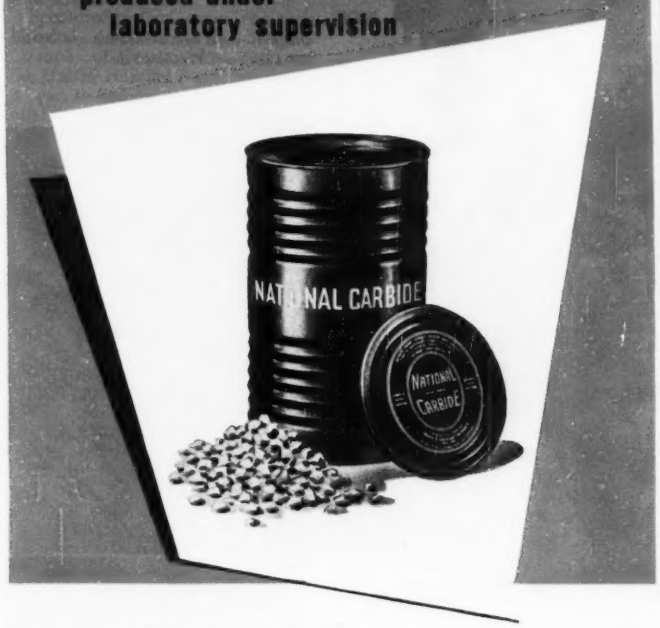
Harold Pope, northern California projects manager for United Concrete Pipe Corp., pauses to talk with Fred Grumm, deputy California state highway engineer, during an inspection of the Stockton, Calif., plant of the United Concrete Pipe Corp. Men in the background are placing concrete in forms for 24-ft. long pipe for San Francisco's Hetch Hetchy aqueduct.

Top men in construction of Detroit Dam on the North Santiam River, Oregon, are, from left to right, Tom Price, in charge of equipment for Consolidated Builders and an aggregate expert; Lieut. Col. John W. Miles, resident engineer, and Russell Hoffman, vice-president of Consolidated Builders and general superintendent for the job.

At control table in new filter building of Los Angeles Metropolitan Water District's expansion of La Verne water softening and filtration plant are, left to right, Franklin Thomas, president, ASCE; J eph Jensen, chairman, district board of directors; Preston Hotchkis, president, Colorado River Association, and Julian Hinds, district general manager and chief engineer for the water district.

For high acetylene yield . . . specify National Carbide

produced under laboratory supervision



Rigidly controlled and tested during manufacture . . . and produced from the finest lime and coke available, "*National Carbide*" (meeting all Federal Specifications) assures every customer an exceptionally high acetylene yield per pound of carbide — a minimum 4½ cu. ft. This high quality, plus careful adherence to a special packaging technique accounts for "*National's*" wide acceptance as the Carbide producing maximum acetylene production . . . at lowest operating cost.

Also, and of vital importance to you, no matter where your plant is located, "*National Carbide*" can be obtained in any quantity from a nearby Airco office, authorized dealer, or warehouse.

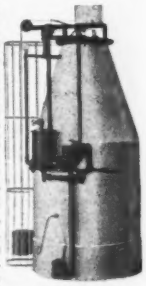
For more information about this top-grade product, write your name and address on the margin below, and send it to your nearest Airco office or authorized dealer for a copy of Catalog 30.

★ ★ ★

Air Reduction supplies Oxygen, Acetylene and other industrial gases . . . Carbide . . . and a complete line of gas cutting machines, gas welding apparatus and supplies, plus arc welders, electrodes and accessories. Ask us about anything pertaining to gas welding and cutting, and arc welding . . . we'll be glad to help you.

More news about AIRCO products

STATIONARY ACETYLENE GENERATORS



Airco's 300 pound (double rated — 600 cu. ft. per hr.) and 500 pound (double rated — 1,000 cu. ft. per hr.) stationary acetylene generators are suitable for operating all types of welding or cutting torches.

Automatic in principle, these generators feature hot galvanized shells — inside and out, with all welded seams. Operating parts have been reduced to a minimum — and are easily accessible for inspection or repair.

Also included as standard equipment are "protectomotor filters" to entrap suspended lime, and prevent clogging acetylene pipe lines, regulators and torches.

PORTABLE ACETYLENE GENERATORS

The Airco Type "P" portable actylene generator is designed and constructed for efficiency, convenience, dependable and low-cost operation . . . and requires little attention other than draining and refilling with carbide and fresh water. Other features include:

—Quick, easy charging
—"Air Lift" principle of water circulation
—Glass viewing window in carbide hopper
—Simple and conveniently located controls
—Large-size sludge agitator and valve for complete and fast sludge removal.

Made in three sizes, each approved for double-rated operation: 15-lb. size, 30 cu. ft. per hr.; 30-lb. size, 60 cu. ft. per hr.; and 50-lb. size, 100 cu. ft. per hr.

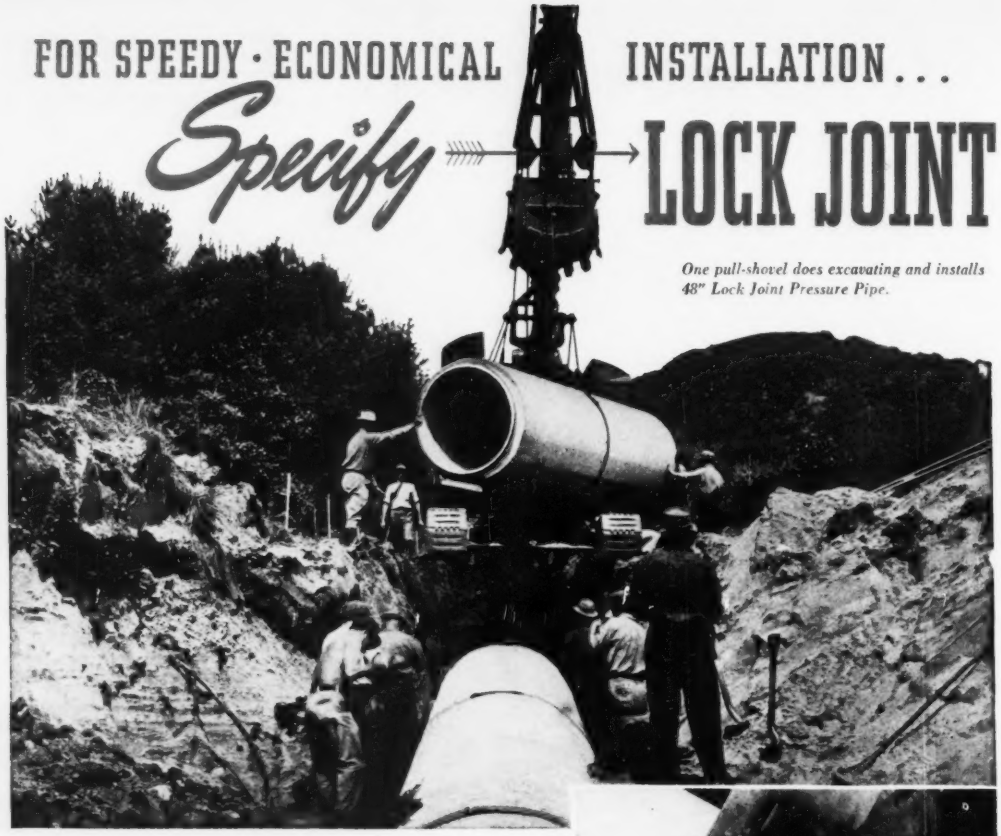
All Airco generators conform with the specifications of Underwriters' Laboratories and Factory Mutual.

AIRCO AIR REDUCTION

Offices in Principal Cities

FOR SPEEDY · ECONOMICAL INSTALLATION . . .

Specify → LOCK JOINT



One pull-shovel does excavating and installs 48" Lock Joint Pressure Pipe.

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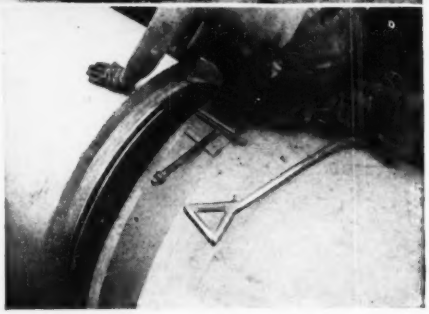
Only one machine is required to make the excavation and install the pipe. No caulking or bolting of the joint is necessary, and the pipe may be back-filled immediately. The Rubber and Steel self-centering expansion joint is flexible to accommodate ground settlement, and is watertight at any internal pressures common to American Water Works practice.

Today, millions of feet of Lock Joint Reinforced Concrete Pressure Pipe, equipped with the Rubber and Steel Joint, installed at low cost and needing little or no maintenance, are giving unfailing service throughout the Western hemisphere.



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SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

EDUCATION and RESEARCH

New Technical Courses

Establishment of a special 30-week course on hospital construction and alterations has been announced by John Gorrell, associate professor of hospital administration at Columbia University's school of public health, who will direct it.

Sponsored by the Greater New York Hospital Association, the Hospital Council of Greater New York and the United Hospital Fund, the course is open to hospital executives and administrative personnel. The faculty will include some of the Country's leading architects, engineers and hospital administrators.

Starting this month, the course will be given Tuesday evenings from 6:30 to 8:30, till the latter part of May. Applications should be made to Dr. Gorrell, 600 West 168th Street, New York, N. Y.

The division of technical institutes of the University of Omaha, Neb., is offering a 12-week course in building contract estimating, under Austin Phelps of the U. S. Engineers. The subjects covered include: Blueprint and plan reading; explanation of surveying, excavation with handling of footings; discussion of foundations and walls; procedures for frame and trim construction; check list of materials; forms for estimating; carpentry materials; masonry and material calculations; sub-contracting materials; electrical and sheet metal contracts; heating and air-conditioning contracts; plastering, marble and tile materials; and making a complete cost estimate for a single-family dwelling.

From Jan. 30 to Feb. 10 next a soil mechanics and foundations short course will be given at the department of civil engineering, The Pennsylvania State College. It is to introduce practicing engineers to the latest developments and to acquaint them with laboratory tests used in those fields. Emphasis will be on practical aspects and applications.

The course is for highway and airport, professional, civil, structural, and agricultural engineers, personnel from construction and architectural consulting firms, from engineering schools, from state and federal departments and agencies—engineers with considerable practical experience but who have not had the opportunity of instruction in soil mechanics and foundations.

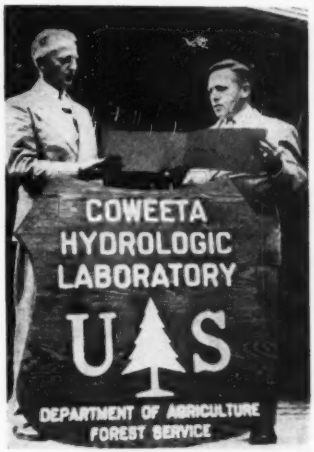
The staff consists of Louis Berger, associate professor of civil engineering, course chairman; Robert E. Minshall, professor of structural engineering; and Calvin G. Reen, professor of engineering extension.

Further information available from Prof. Louis Berger, Department of Civil Engineering.

Columbia Univ. will have new engineering center

Columbia University, New York City, is to have a new Engineering Center. For this purpose it has assembled property with more than 950 ft. frontage at West 125th Street and Riverside Drive and will there create one of the outstanding educational units of its type. This will be part of a $12 million expansion program

(Continued on page 67)



WATERSHED MANAGEMENT—The U. S. Department of Agriculture presented a Superior Service Award to the Division of Watershed Protection and Management, Southeastern Forest Experiment Station, Sept. 9, at the Coweeta Laboratory in the western North Carolina mountains. Charles R. Hursh, left, who has led the Coweeta project since its beginning, accepts the award on behalf of his unit. The presentation was made by Nathan Koenig, right, acting for Secretary of Agriculture Brannan. The award is "For outstanding research achievements regarding the relation of climate, soil, and forest vegetation to stream flow; the establishment of basic principles of hydrology and watershed-management; the translation of research results into practical techniques; the effective dissemination of research findings; and for loyalty, determination, and skill in developing and operating a major hydrologic laboratory."

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Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

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▶**EXPLAINS** the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

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for the school of engineering to include many new research fellowships and scholarships for graduate and undergraduate students.

The property just acquired includes the 4-story building of the Sheffield Farms Co. on West 125th Street. This will be remodeled and equipped for use as a laboratory. Later the main research unit will be erected on adjacent plots at 36 to 48 St. Clair Place and 556 to 564 Riverside Drive. This building will be six stories high and cost $5,000,000.

Dean James K. Finch says that the rapid growth of the school of engineering in recent years has made the expansion necessary. Eight buildings on the Morningside Heights campus now are being used by the school and demands for space are steadily increasing.

Educational Notes

Ayers Hall, the new engineering building of the University of Akron, Ohio, was dedicated Oct. 21.

A refresher course for professional engineers of Springfield, Ill., and vicinity is being given by the division of extension of the University of Illinois.

A team of scientists at Cornell University is studying mud for the U. S. Army. The purpose is to strengthen soil without tons of cement or other mixture.

Awarded a $4,000 scholarship by the Menominee Indian tribe, Edward G. Vigue, 19-year-old Indian from the Keshena, Wis., Indian reservation, entered Marquette University this fall. He will study engineering.

A soil mechanics and foundations short course will be held at Pennsylvania State College, Jan. 30-Feb. 10 to offer practicing engineers an opportunity to keep up-to-date with new developments in the field. Sponsored by the school of engineering and the extension services of Penn State, the course carries three college credits. It is designed for those who have previous knowledge of mechanics and strength of materials.

A total of 119 basic research projects is now being carried on by some 40 faculty members and 134 other researchers in the various departments of the college of engineering at the University of Wisconsin, according to a progress report by Prof. Kurt F. Wendt, professor of mechanics and associate director of the engineering experiment station.

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NOTICE the leveling screws on the instrument leveling head above. See how they are always totally enclosed — regardless of their position "in" or "out". This means all dust and dirt are sealed out — their precision sealed in.

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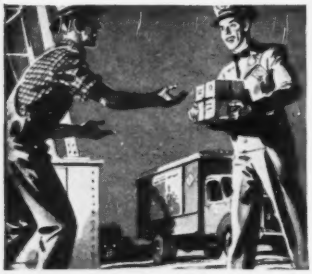

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OBITUARY

Prof. Cecil Sidney Camp, 42, director of the school of hydraulic engineering at Louisiana State University, Baton Rouge, with his wife and two young sons were among six persons killed in a head-on automobile collision near Ferriday, La., on Oct. 16. Killed also was **Francis E. Mitchell**, 33, of Fayetteville, Ark., who was a graduate hydraulic engineering student at the university. Professor Camp had been on the LSU faculty for about a year. He received a B.S. degree in civil engineering from the University of Arkansas in 1929 and a master's degree in mechanical engineering and hydraulics from Iowa State University in 1937. He had taught at Syracuse University, Mississippi State College, Oregon State College, and the University of Tennessee. He had also been in the South Atlantic U. S. Engineer Corps, held a position with TVA, and with a Chicago engineering firm.

Col. Llewellyn DeCew, 54, senior engineer in the San Francisco city engineer's office, died Oct. 14 in Morgan Hill, Calif. He had been in the office of the city engineer for 21 years. He was in the Corps of Engineers Reserve and participated in both world wars. In World War II he served with the Corps of Engineers in Northern France, the Rhineland, and Central Europe.

Alfred B. Hartley, 60, chief sales engineer and a partner in the Edward R. Bacon Co., San Francisco, died Oct. 1 in Carmel, Calif. He had been with the firm, which sells construction equipment, for 30 years. Mr. Hartley, who lived in San Mateo, Calif., served as a lieutenant in the Corps of Engineers during World War I.

D. Graham Copeland, 64, of Fort Myers, Fla., the engineer, builder and administrator of the Barron G. Collier developments in southwest Florida, died in New Orleans, La., Oct. 18. An Annapolis and R.P.I. graduate, he had a successful engineering career in the Navy and with private interests in New Orleans and Cuba. His most impressive achievement was the building of the Tamiami Trail through Collier County at a cost of $716,000. He laid out the route, designed the construction and supervised building as chief engineer of the Collier construction firm, Alexander Ramsay &

(Continued on page 71)

now it can be told- metallizing stops corrosion

Storage Tank, Riverhead Water District, Riverhead, Long Island, showing riser pipe being metallized in 1940. Tank interior had been metallized in 1933.

. . . not for one, two, or even ten years—but *from 20 to 50 years* under severe conditions in the field!

We have long known that metallizing stops corrosion. Accelerated tests in the laboratory demonstrated that much. But we wanted a good backlog of actual applications in the field before telling the industrial world, *for sure*, what metallizing would actually do to help solve specific corrosion problems.

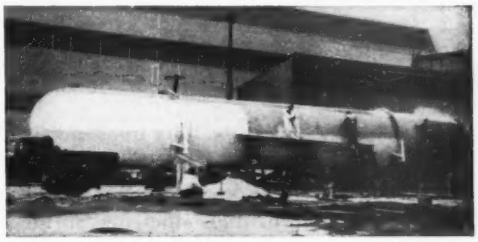
Here are two examples of anti-corrosion metallizing. The water storage tank shown is a good case in point. Previous maintenance practice had been to hot-coat the tank interior every 5 or 6 years. This service life was unsatisfactory. So, in 1933 metallizing was used, and pure zinc sprayed on the inside walls. At that time the tank exterior, riser pipe and structure were *painted*, but a small section of the pipe exterior was *metallized* with aluminum as a test panel.

By 1939 paint on the pipe had scaled badly, but the metallized test panel was in excellent condition—in the words of the Riverhead Superintendent, "... as good as the day it was put on." In 1940 the tank interior was inspected. It was found that all pitting and corrosion had been stopped completely by the metallized coating. Consequently, the entire riser pipe exterior was metallized at that time with a coating of zinc, followed by a coating of aluminum; then painted for appearance.

Now, nine years after, the paint has started to peel from weathering. But—even where it has peeled, the only surface exposed to the salt atmosphere on Long Island is the metallized coating, which is as sound as when it was first put on. The steel pipe has not been attacked at all.

Pipe Lines—Gas Holders. Another user laid a 12" pipe line in 1932. Extra heavy, double-dipped galvanized pipe was used because the line crossed numerous salt sloughs and marshes. All joints were welded and metallized with zinc where the galvanizing was burned off in welding. After 17 years the galvanized pipe has been eaten completely through and patched in many places; *but the metallized joints are still in perfect condition.*

This same user metallized 10,000 sq. ft. of gas holders with only .003" zinc in 1932; touched up a few thin spots in 1941. Although continuously exposed to salt atmosphere and acid fumes from a nearby refinery, these metallized surfaces are still in first class condition.



Metallizing high-pressure gas holders.

Further Information Available. Metallizing may help solve *your* corrosion problems. For further information, or the name of your nearest metallizing contractor, write:

FREE BULLETIN. Bulletin 62—"Stop Corrosion with Metallizing" pictures many different types of jobs, such as bridges, structural steel, barges, dam gates; includes spray test and life expectancy charts.

Metco – Reg. U.S. Pat. Off.

METALLIZING ENGINEERING CO., INC.
38-22 30TH STREET METCO LONG ISLAND CITY 1, N. Y.

R. J. McWaters
Metallizing Engineering Co., Inc.
38-22 30th St., Long Island City 1, New York

Please send me Bulletin 62.

NAME_____

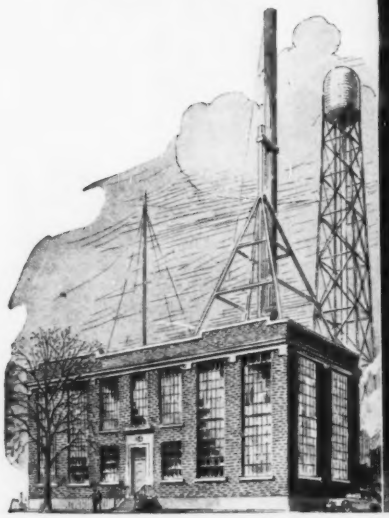
COMPANY_____

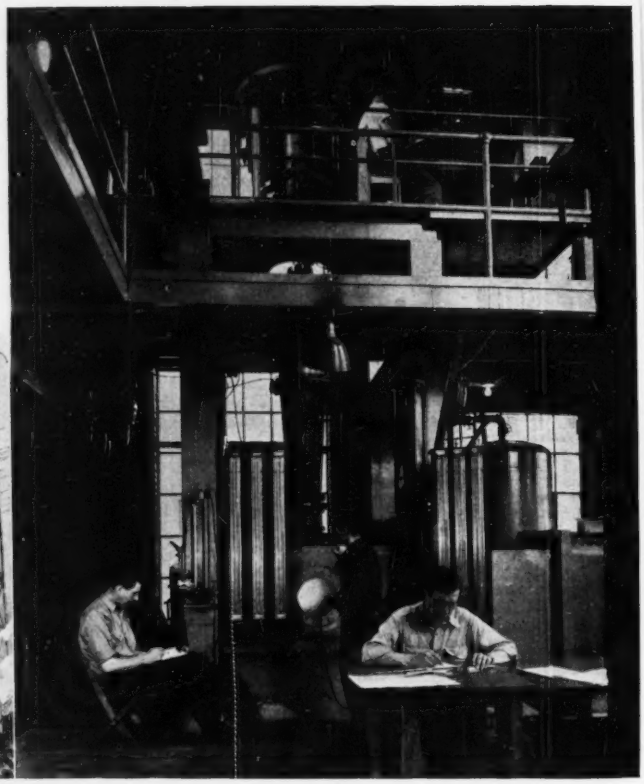
ADDRESS_____

CITY_____ STATE_____

No GUESSWORK-

Each problem is worked out in advance scientifically





The SMITH *Laboratory-*

PROVING everything in advance! This in large measure accounts for our supremacy in the field of Hydraulics. We very early recognized that the designing of modern, high efficiency turbines, pumps and adjustable blade ship's propellers requires precise scientific knowledge. Hence we established our own Hydraulic Testing Laboratory where the answers to problems are worked out in homologous models before production starts -- another advantage of placing your hydraulic problems in our hands!

If It's Hydraulics- Put It Up to Us!

S. MORGAN SMITH Co.

YORK, PENNA. U.S.A.

Kerr. In the first world war he was officer in charge of the construction of the U. S. Naval air station in Ireland. In 1920 he completed the erection of eight 840-ft. steel towers for the French government at the Bordeaux radio station.

Robert Beryle, 90, pioneer Los Angeles, Calif., contractor, who built the Broadway tunnel there in 1901, died Oct. 17.

John O. Forss, 63, engineer and vice-president of the Lake Superior District Power Co., died at Ashland, Wis., recently.

Robert N. Gillespie, 45, chief engineer for the Cement Gun Co., Inc. of Allentown, Pa., died at Allentown, Oct. 22. A civil engineering major at Union College, Schenectady, N. Y., he joined the Cement Gun Co. in 1924. He was resident engineer for the company on a large contract in connection with the construction of the Holland Tunnel in New York, and later on a great many other important contracts in various parts of the country. One of them, near Raymondville, Tex., in the lower Rio Grande valley, involved 214 miles of canals.

Robert G. Percival, Sr., 48, construction superintendent of the Fairfield Engineering Co., Marion, Ohio, for 25 years, was killed Oct. 21 in an automobile collision near Elwood, Ind.

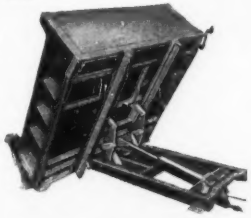
Col. Gordon C. Day, USA (ret.), 61, civil engineer, and before his retirement in 1942, stationed at Fort Belvoir, Va., died Oct. 21 in Washington, D. C. He was chief engineer officer of the Third Corps area with headquarters in Baltimore and chief engineer at the Port of Embarkation, Brooklyn, N. Y. He had also been stationed in Panama, and in Charlotte, N. C., San Antonio, Tex., and Rock Island, Ill. He served overseas in World War I and was a graduate of Norwich University.

Charles H. Ruth, 59, civil engineer and general superintendent of The Evening Star Newspaper Co. in Washington, D. C., died there Oct. 20. He joined the Army Engineer Corps in World War I. A lifelong interest in highway safety led him to serve as director of the National Safety Council, and the Washington Board of Trade's Traffic Committee. During World War II, he worked with the labor-management committee of the Office of Defense Transportation and on the Trucking Commission of the War Labor Board.

"I BOUGHT ANTHONY DUMP BODIES— —THEY COST ME LESS"

Contractors everywhere are buying where they can do the best. As one contractor recently remarked:

"After weighing all of today's factors of price, quality, and performance I bought Anthony Dump Bodies and Hoists . . . they cost me less."



For prices on equipment to meet your specifications it will pay you to call your Anthony distributor. Quick delivery from stock. Write for name of your distributor.

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Up Faster
with
Ladscaf
NEW, LOW COST SCAFFOLDING
FOR MAINTENANCE, PAINTING, CLEANING
Ladscaf is a "maintenance must," a new lightweight tubular steel scaffolding designed to fill all your maintenance scaffolding needs and at a low cost comparable to unwieldy wood-type scaffolding.
You'll like the flexibility that permits you to work in corners, up and down stairs, and in confined areas. And the time saved in erecting and disassembling, plus the ease of storing and moving, means many payroll dollars saved. Be sure to see Ladscaf right away—distributors in principal cities.
Send for Ladscaf Bulletin No. 22
UNIVERSAL
MANUFACTURING CORP. ZELIENOPLE, PA.
World's Largest Manufacturer of Steel-Panel Scaffolding

Just Remember the Buy-Word in—

The Case of the Dejected Dog

Purchasing Agent: *My dog didn't win even third prize! The judge said his ears are too ragged . . .*

Draftsman: *Dog-eared, huh? Hey, that's what wear and tear do to our tracing paper drawings at the shop! There'd be no more of that if you would order Arkwright Tracing Cloth. It stands up under time and use.*

Yes, Arkwright has long been the buy-word for permanence in drawings. Unlike tracing paper, it does not crack and tatter with repeated use—nor become opaque and brittle with time as a file reference record. There are six big reasons why Arkwright Tracing Cloth is the better buy for *any* drawing that may be needed later. Keep a supply ready—it's a paying investment!

Send for generous working samples of Arkwright and see how amazingly it passes the critical tests of fine draftsmanship. Arkwright is sold by leading drawing material dealers everywhere. Arkwright Finishing Co., Providence, R. I.

The Big Six Reasons Why Arkwright Tracing Cloths Excel

1. Erasures re-ink without feathering.
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ARKWRIGHT

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 25 YEARS

Elections and Activities

Wells A. Gray of Bowmansdale, Pa., has been named executive secretary of the state's new Highway Planning Commission. Gray, who is director of the State Division of the Pennsylvania Economy League, has been made available through the cooperation of the league. The commission appointed last month by Governer Duff was authorized by the 1939 General Assembly to make a thorough survey of highway conditions and needs in the state.

The North Carolina State Employe Association has elected the following officers: Alden P. Honeycutt, chairman; Mrs. Flossie B. Moore, vice chairman; and N. H. Coxe, secretary-treasurer.

Engineers Club of Columus, Ohio, has elected Ted Cochran, Universal Concrete Pipe Co., president; Carl Walker, vice-president; Philip Rea, Ohio Highway Department, secretary-treasurer; and directors: Charles Bradley, Ohio Public Utilities Commission; Floyd Redick, Marble Cliff Quarries; George Thormeyer, Ohio Highway Department, and Arthur Hess, Boyajohn Associates.

In his first tour of the maritime provinces since his election as president of the Engineering Institute of Canada, John E. Armstrong, chief engineer of the Canadian Pacific Railway, said the EIC is strongly opposed to employment of engineers from outside of Canada for work which is done in Canada.

He said the EIC has started listing Canadian consulting engineers, and the list will be available for employers. L. Austin Wright, general secretary of the EIC touring with Mr. Armstrong, criticized the Canadian government for failing to act on the EIC request for restoration of the tariff on engineering plans brought in from the United States. He contended the tariff elimination had an adverse effect on the engineering profession in Canada.

He also censured the Canadian government for failure to heed the EIC request for appointment of competent Canadian engineers to the Joint International Commission. He said such appointments had been

(*Continued on page 75*)

Make your town a picture of progress by *streamlining* streets with smooth steel poles

Brackets, luminaires and component parts furnished by Joslyn Mfg. and Supply Co.

IT'S good business to tidy up your town. And no improvement you can make will add so much to its orderly appearance as the replacement of obsolete, irregular poles with modern, good-looking tubular steel standards.

But "good looks" is but one of the advantages you give your town through the adoption of tubular steel poles for all street lighting, power lines, and other commercial purposes.

There's the advantage of greater safety. Steel is stronger . . . an asset which permits desired height with minimum base diameter, thus offering less visual obstruction and less hazard.

Then, there's the advantage of economy. Tubular steel poles can be spaced at wider intervals . . . and fewer poles are required.

And, finally, there are installation and maintenance savings worthy of your consideration. Tubular steel poles are easy to rig and erect with minimum manpower, and they rarely ever have to be replaced, and, other than occasional painting, need no maintenance.

In choosing new poles, you can make no wiser selection than NATIONAL Seamless Tubular Steel Poles. Every U·S·S Tubular Steel Pole is made by the seamless process . . . a solid billet of finest quality steel is pierced to form the basic tube . . . there is no weld, no line of longitudinal weakness . . . uniform wall strength from end to end. For detailed information, write for Bulletin No. 14. Please address your inquiry to National Tube Company, Frick Building, Pittsburgh 19, Pa.

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NATIONAL *Tubular* STEEL POLES

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UNITED STATES STEEL

WITH ALL THEIR EXTRA VALUE...

DODGE

"Job-Rated" TRUCKS are priced with the lowest!

It's what you get for what you pay that counts!

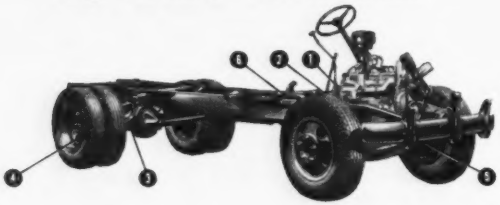
Read, on this page, why Dodge "*Job-Rated*" trucks offer you *extra* value.

Then, see your Dodge dealer. Ask him to quote you the price of the Dodge "*Job-Rated*" truck that fits your hauling or delivery job.

You'll get more for your money . . . in performance, in economy, in long-lasting truck satisfaction.

See your Dodge dealer *now*.

Dodge "Job-Rated" Chassis Features



1. SUPER-FRICTION CLUTCHES. Large frictional areas. "*Job-Rated*" for smooth action and long life.

2. RUGGED 3-, 4- or 5-SPEED SYNCHRO-SHIFT TRANSMISSIONS —"*Job-Rated*" for the load. Carburized gears; heat-treated shafts; antifriction bearings throughout.

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4. CYCLEBONDED BRAKE LININGS (no rivets) prolong brake life.

5. CROSS-TYPE STEERING . . . Sharp turning angle; easier handling, and parking.

6. SAFETY-LOCATED GAS TANKS . . . Outside the cab, NOT inside!

• • •

NEW STEERING-COLUMN GEARSHIFT . . . Standard equipment on ½-, ¾- and 1-ton models with 3-speed transmissions . . . provides easier handling, more unobstructed floor space, greater safety of operation.

"RIGHT-SPOT" HAND BRAKE . . . under the center of the cowl . . . right where you want it. Standard on all ½-, ¾- and 1-ton models. Provides unobstructed floor space; easier passage through either cab door.

Dodge "Job-Rated" Engine Features!

- **FAMOUS DODGE L-HEAD TRUCK ENGINES . . .** "Job-Rated" for your loads; save gas, oil.
- **COMPLETELY SPLASH- AND DUST-PROOF ELECTRICAL SYSTEM . . .** with high-output generator. Resistor-type spark plugs, and high-output coil, insure amazingly smooth engine operation; longer plug life.
- **EXHAUST VALVE SEAT INSERTS . . .** resist wear and pitting. Reduce valve grinding; preserve performance.
- **REPLACEABLE PREFITTED MAIN BEARINGS . . .** precision, long-life quality. Reduce maintenance costs.
- **FULL-PRESSURE LUBRICATION . . .** positive pressure to main, connecting rod and camshaft bearings and camshaft drive, prolongs engine life.
- **FULL-LENGTH CYLINDER COOLING . . . 4-RING ALUMINUM ALLOY PISTONS . . . OIL-BATH AIR CLEANER** and many other money-saving features!

For the good of your business...
switch to DODGE "Job-Rated" TRUCKS

made by the U. S. government. Wright said that as about 90 percent of the work of the commission involved engineering problems, Canada should have engineering representation.

A. W. Russell, building inspector for San Mateo County at Redwood City, Calif., has been elected president of the Pacific Coast Building Officials Conference, Arthur G. Hoever, building inspector of Spokane, Wash., was named first and Gilbert E. Morris, superintendent of building for Los Angeles, second vice-president. Hal Colling of Los Angeles was re-elected executive secretary and Cassatt D. Griffin, assistant chief engineer of the Los Angeles County Department of Building & Safety, treasurer.

W. H. Sparks, Kamloops, B. C., has been elected chairman of the Municipal and Public Works Division of the B. C. Engineering Society. Other members of the executive committee elected are G. W. Meckling and F. G. De Wolfe of Vernon, and J. C. Oliver of Vancouver. Past-chairman is R. E. Potter, Victoria, and secretary-treasurer is A. S. G. Musgrave, Oak Bay.

The Florida Engineering Society has taken a strong stand against the practice of manufacturing firms and public utilities offering engineering services to owners using their products. "The Florida Engineering Society realizes that the providing of such engineering advice, consultations or designs may be considered as a related activity involved in developing and promoting the production and sale of the product offered," according to the resolution prepared by the board of directors which added that "such service is a violation of the society's ethcis; is contrary to the best interests of the client, and is a practice that should be discontinued."

MAJOR MEETINGS

National Association of Housing Officials, Hotel Statler, Boston, Mass., Nov. 13-16.

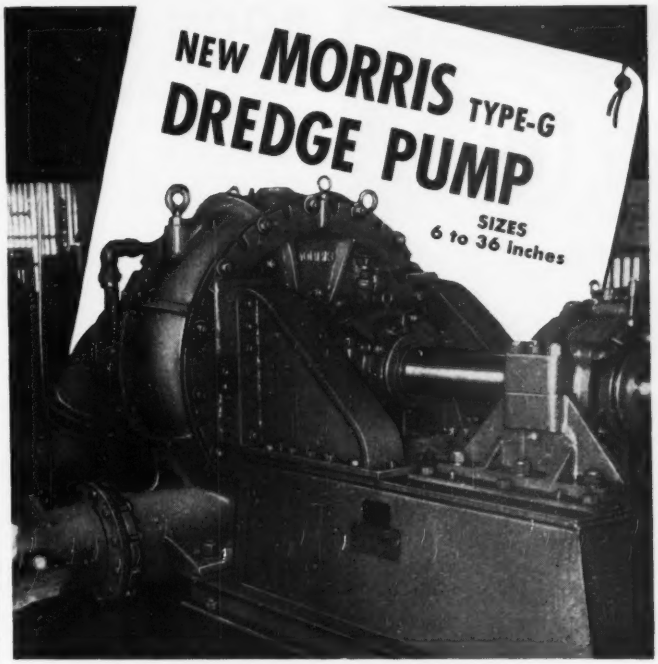
Society for Experimental Stress Analysis, Hotel New Yorker, New York City, Nov. 30-Dec. 1.

American Municipal Association, Hotel Cleveland, Cleveland, Ohio, Nov. 30-Dec. 2.

National Society of Professional Engineers, Hotel Rice, Houston, Tex., Dec. 8-10.

Highway Research Board, National Academy of Sciences, Washington, D. C., Dec. 12-16.

National Research Council, Washington, D. C., Dec. 13-16.



Your ticket to a

LONG RUN PERFORMANCE

with Minimum Power Consumption

What do we all want most in a dredge or materials handling pump? There is only *one* answer — *the lowest possible overall cost per yard or ton.* You've got it in the new Morris Type G. Intervals of down-time are few — because Type G is simple, rugged, fool-proof. Power consumption is cut to the bone, over a large range of capacities — through long or short pipe lines — against high heads or low. You'll be amazed at the performance of this new Morris Dredge Pump — but take a look at these design and construction features and you'll know why this "work horse" is being called "the most efficient dredge pump ever built."

1. **Runs maximum length of time under high, sustained output—without replacements. That means LESS DOWN-TIME.**
2. **Designed with fewest possible wearing parts—and these have longer life. That means LESS DOWN-TIME.**
3. **No complicated seals or sealing rings—less vulnerable points. That means LESS DOWN-TIME.**
4. **Unusually easy to dismantle, and reassemble. That means LESS DOWN-TIME.**
5. **Has Morris exclusive balanced impeller—less thrust—longer bearing life. That means LESS DOWN-TIME.**

Just issued — Write today for detailed literature about this New Morris Type G Dredge Pump

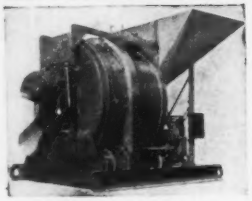
MORRIS MACHINE WORKS
Baldwinsville, N. Y.

MORRIS *Centrifugal Pumps*

Branch Offices in Principal Cities

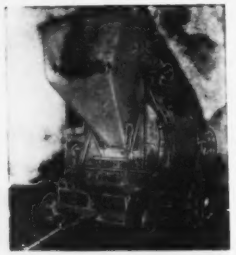
MONEY-MAKING

MIXERS



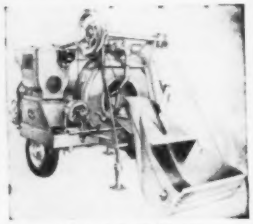
CMC 56-S TWO-YARDER

Specifically designed to facilitate increased Central Plant production on big jobs or in commercial plants. Advanced CMC engineering and features assure FASTER, SMOOTHER, and MORE EFFICIENT operation. Equipped with Timken Bearings throughout. Renewable hardened steel drum liners and hard alloy coated discharge buckets insure extra long life. Hydraulic finger-tip controlled charging and discharging.



CMC 11S and 16S Four Wheelers

End or side discharge. Furnished in optional truck mountings. Compact construction for easy trailing and spotting on job. Timken roller bearing. Machined drum trucks. Improved stabilizers.



CMC 6-S TRAILER

HERE IS THE MOST VERSATILE MIXER ON WHEELS. Superior CMC design assures faster charging. This high-speed non-tilt unit incorporates all the plus-value features that have made CMC mixers "tops in the field."

Write today for latest illustrated catalog and prices.

CONSTRUCTION MACHINERY COMPANIES

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BOOK REVIEWS

The Hard Way

DOWN THAT PAN-AMERICAN HIGHWAY—By Roger Stephens; with an introduction by E. W. James. 352 pp. Published by Roger Stephens, Publisher, Inc., 143 Liberty St., New York 6, N. Y. $7.50.

This large book is a copiously illustrated account, in diary form, of a trip taken by the author over the long section of the partly built or projected Pan-American Highway that lies between Laredo, Texas, and the Panama Canal. Mr. Stephens set out to see whether it was possible to travel by road down through Mexico and Central America to the Canal Zone, and to learn what means of transportation were available and what the trip would cost. In all he covered 3,231 miles—1,993 by public bus, 942 miles by car and truck, 183 miles on foot, 37 miles on muleback, 36 on horseback, 23 by jeep and 17 in an oxcart. His transportation costs were $140.14, and it took 32 days.

This diary, in which the entries are so detailed that at times they are as closely spaced as 6:15, 6:30, 6:45, 6:50 and 7 a.m., is supplemented by a variety of information about the countries of Central America, its peoples and customs, and about modes of travel that are available to others who would follow in Mr. Stephens' footsteps.

Data on Chicago Buildings

HISTORY OF THE DEVELOPMENT OF BUILDING CONSTRUCTION IN CHICAGO—by Frank A. Randall. 385 pp. University of Illinois Press, Urbana, Ill. $5.

Assembled here in one compact book is a vast amount of information concerning buildings in the Windy City collected from a wide variety of sources. Although restricted in the main to Chicago, the facts presented are of significance in other cities as well because many advancements in building practices originated or saw early development in Chicago—balloon construction of frame buildings, fire-proof construction, rational proportioning of the areas of isolated footings, steel grillages to secure shallow footings, the Chicago caisson, skeleton construction and wind bracing, and reinforced concrete construction.

The author outlines the growth and early development of the city from the erection of the first structure in 1779 to the great fire in 1871. He traces the evolution of buildings from before the fire through the development of skeleton construction. And he summarizes the development of foundations. Included also are brief biographies of early Chicago builders, a chronological account of the city's important buildings, and a complete index giving buildings by name and by location.

French Construction Practice

TECHNIQUES DES TRAVAUX—Two Volumes. By Max Jacobson. 1020 pp. Published by Librairie Polytechnique Ch. Beranger, 15 Rue des Sainta Peres, Paris VI, France. Price 3,700 francs for each volume.

A wealth of French civil engineering practice is set forth in this two volume work by Max Jacobson. Developed over many years in the course of the author's engineering work, the books may best be characterized as a treatise in handbook form. Foundations, concrete, retaining walls, pavement, railway, highway and airport facilities, bridges and dams are covered in the text.

The books are so copiously illustrated that even a person whose French is a bit "rusty" will not find it difficult to understand many of the descriptions.

Statics of Elastic Bodies

STRENGTH OF MATERIALS—By J. P. Den Hartog. 323 pp. McGraw-Hill Book Co., New York, Toronto, London. $4.

As the author points out, this book is devoted to a subject traditionally called "Strength of Materials," but which can be more aptly described as the "statics of deformable elastic bodies." It deals with the calculation of stresses and deflections or deformations in beams, shafts, pipes or other structures as functions of the loads imposed upon them and of the dimensions of the structure.

Each article starts with general theory and then presents practical examples of the theory. It differs from most texts on the subject in that: Extensive use is made of Mohr's circle for stresses and moments of inertia. Cantilever formulas are used in solving beam problems as an alternative to the moment-area method. The theory of the center of shear is presented to solve the problem of bending of unsymmetrical sections. Photoelasticity and strain gages are discussed in a chapter on experimental elasticity.

The book is designed for use in a first course in the subject for engi-

(Continued on page 79)

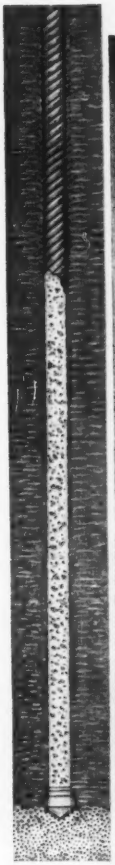
Net Settlement-ZERO!

100 FT. LONG BUTTON BOTTOM PILES* SOLVE FOUNDATION PROBLEM FOR MEXICO CITY'S TALLEST BUILDING

ALL OF MEXICO CITY is subject to two types of settlement: 1. general subsidence of whole area caused by drainage of water content of volcanic clays underlying city; 2. local settlement caused by weights placed on soil by buildings and other structures. Almost every major structure has been subject to settlement, sometimes excessive, resulting in damage, and in a few cases, danger of collapse.

A BUTTON BOTTOM PILE driven through 100 feet of soft clay to bearing on a layer of highly compacted sand and gravel, was test loaded. 100 tons, twice design load, was placed on this pile. After removal of load, net settlement measured zero.

LA LATINO-AMERICANA Cia. de Seguros Sobre La Vida, S.A., largest life insurance company of Latin America, are builders and owners of this new 40 story structure, tallest in Mexico City.



Drawing of La Latino-Americana Building — to be 40 stories high — almost twice the height of any other building in Mexico City.

see our CATALOG in SWEET'S FILE

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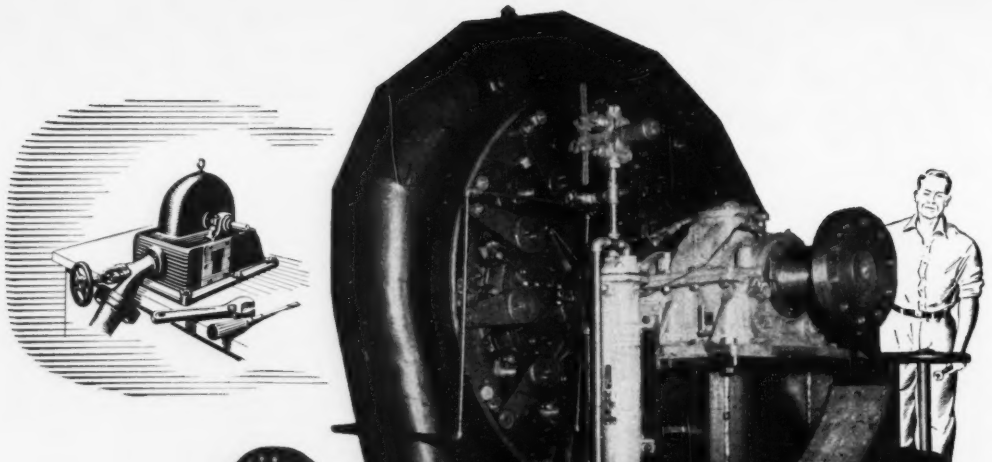
WESTERN FOUNDATION DE MEXICO, S.A. Av. Morelos 110-301, Mexico D.F.

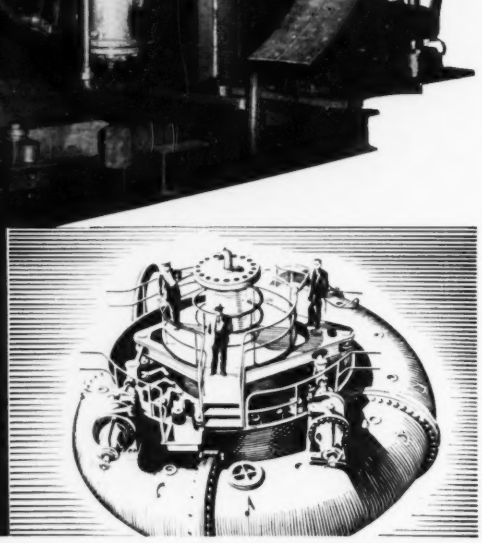
WESTERN FOUNDATION CORPORATION 2 Park Avenue, New York 16



BALDWIN

HYDRAULIC TURBINES

All sizes for all applications



No matter how large or how small a water-power development you are considering—Baldwin can provide a turbine unit to fit!

OUTPUTS. Baldwin is equipped to build turbines in a range from small fractional horsepower water motors up to the largest units that can be shipped.

HEADS. Baldwin can furnish turbines for any required head—from the highest to the lowest.

TYPES provided by the line include impulse, propeller, Francis, and Kaplan (adjustable blade) units.

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For a concise, comprehensive picture of the Baldwin turbine line, ask for Bulletin 252. The Baldwin Locomotive Works, Philadelphia 42, Pa. The Pelton Water Wheel Co., 2929 Nineteenth Street, San Francisco, Calif.

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Boston, New York, Philadelphia, Houston, St. Louis, Chicago, Cleveland, Pittsburgh, San Francisco, Seattle, Washington. In Canada: Baldwin Locomotive Works of Canada, Ltd., Toronto, Ontario.

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HYDRAULIC TURBINES

IMPULSE PROPELLER FRANCIS KAPLAN

(Continued from page 76)

neering students. However, it contains some material that might be omitted from such a course initially and taken up later in a more advanced course. Included also are 350 problems, with answers, at the end of the text, indexed to the section to which they apply.

Properties of Materials

MATERIALS OF CONSTRUCTION—WOOD, PLASTICS, FABRICS—By Albert G. H. Dietz. 347 pp. D. Van Nostrand Co., New York, Toronto, London. $4.50.

The increasing use of composite constructions of wood, plastics and fabrics makes logical a volume devoted to a discussion of the properties and uses of these materials separately and in combination. In this book, an effort is made to stress the essential nature of the materials and to develop their applications from those basic attributes. For example, the strength, hygroscopic properties, decorative value, preservative treatments and the many other characteristics of wood and its use in the form of solid timbers, plywood and laminated timbers are shown to stem naturally from its fundamental fibrous and chemical structure.

The field of composite materials is treated in a chapter on building boards, structural sandwiches and timber-concrete decks. Like plastics-based laminates, these provide properties not found in the individual components.

Reports and Pamphlets

MUNICIPAL REGULATION OF PARKING LOTS—The Eno Foundation for Highway Traffic Control, Saugatuck, Conn.

THE MOTOR-VEHICLE DRIVER: HIS NATURE AND IMPROVEMENT—The Eno Foundation for Highway Traffic Control, Saugatuck, Conn.

CALCIUM CHLORIDE FOR ICE CONTROL—Manual IM 1. Calcium Chloride Association, 1028 Connecticute Ave., N. W., Washington 6, D. C.

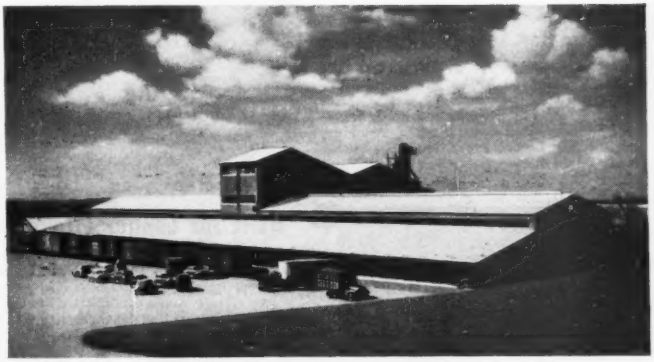
HIGHWAY ENGINEERING AS A CAREER—1949 National Essay Contest. American Association of State Highway Officials, 1220 National Press Building, Washington 4, D. C.

BEHAVIOR OF VITRIFIED CLAY SEWER PIPE UNDER LOAD—Bulletin No. 137. Engineering Experiment Station, The Ohio State University, Columbus 10, Ohio. 75c.

FIRST PROGRESS REPORT OF A LABORATORY INVESTIGATION OF ROADBED STABILIZATION—Reprint Series No. 42. Engineering Experiment Station, University of Illinois, Urbana, Ill. 10c.

(Continued on page 80)

Now you can get a STANDARD building to fit your precise requirements



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PROGRESS REPORTS OF INVESTIGATION OF RAILROAD RAILS, JOINT BARS, AND MANGANESE STEEL CASTING—Reprint Series No. 43. Engineering Experiment Station, University of Illinois, Urbana, Ill. 15c.

CONTRIBUTIONS TO PROCEEDINGS OF THE SECOND INTERNATIONAL CONFERENCE ON SOIL MECHANICS AND FOUNDATION ENGINEERING—Circular Series No. 55. Engineering Eperiment Station, University of Illinois, Urbana, Ill. 35c.

AN INVESTIGATION OF THE BACKWATER PROFILE FOR STEADY FLOW IN PRISMATIC CHANNELS—Bulletin Series No. 381. Engineering Equipment Station, University of Illinois, Urbana, Ill. 50c.

FATIGUE STRENGTH OF FILLET-WELD, PLUG-WELD, SLOT-WELD JOINTS CONNECTING STEEL STRUCTURAL MEMBERS—Bulletin Series No. 380. Engineering Experiment Station, University of Illinois, Urbana, Ill. 60c.

THE PROPORTIONING OF CONCRETE—By A. E. Goldbeck and J. E. Gray. National Ready Mixed Concrete Association, 1325 E. Stree, N. W., Washington, D. C.

GUIDE TO A STUDY COLLECTION ON HOUSING PLANNING AND CONSTRUCTION TECHNIQUES—Division of Libraries and Institutes, Department of State, Washington, D. C.

NATIONAL STANDARDS FOR CARPENTRY APPRENTICESHIP—Copies may be obtained free of charge from the Bureau of Apprenticeship, U. S. Dept. of Labor, Washington 25, D. C.

ZONING IN NEW YORK STATE—A GUIDE TO THE PREPARATION OF ZONING ORDINANCES. Copies may be obtained free of charge from the New York State Department of Commerce, 112 State Street, Albany 7, New York.

STEEL COLUMNS—A SURVEY AND APPRAISAL OF PAST WORKS—Bulletin No. 91, Engineering Experiment Station, Agricultural and Mechanical College of Texas, College Station, Texas.

RECREATION MANUAL—Pennsylvania Department of Commerce State Planning Board, Harrisburg, Pa.

FILLING AND SEALING MATERIALS FOR JOINTS IN CONCRETE ROADS—Road Note No. 7. British Department of Scientific and Industrial Research, Road Research Laboratory, London, S. W. 1, England. Price, 4d.

ROAD RESEARCH 1946 AND 1947—British Department of Scientific and Industrial Research, London, S. W. 1, England. Price, 1s. 6d.

HIGHWAY SAFETY—Supplement No. 1 to Bibliography No. 2. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

PARKING—Bulletin No. 19. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $0.90.

PAVEMENT PERFORMANCE—Bulletin No. 20. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $0.90.

STANDARD ENGINEER'S REPORT

RPM DELO

TEST DATA

LUBRICANT RPM Delo Supercharged Lub. Oil

UNIT Caterpillar Diesel - D13000 5¾ x 8"

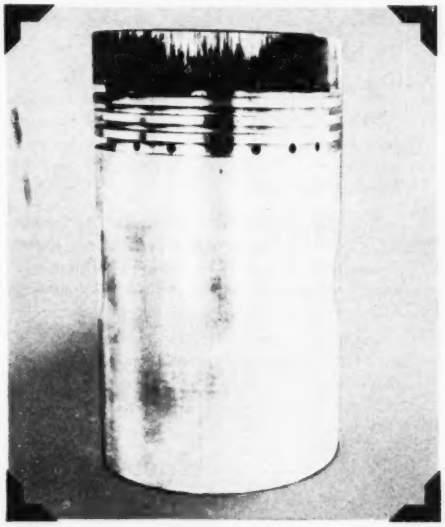
CONDITIONS Cont. high load - Pumping water

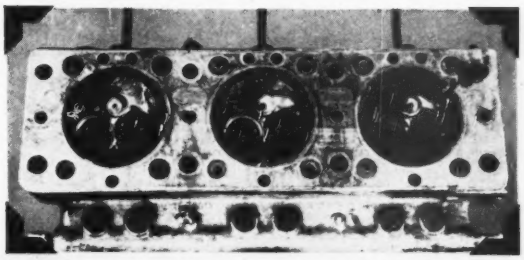
FUEL Regular commercial Diesel fuel

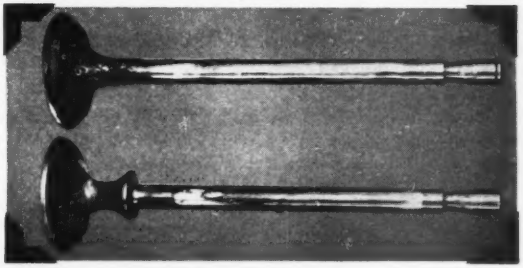
TEST PERIOD 4 months

LOCATION Coolidge, Arizona

CYLINDER WEAR REDUCED 75% BY NEW LUBRICATING OIL







RPM DELO SUPERCHARGED LUBRICATING OIL held cylinder wear to 0.0007 inches per 1000 hours in a stationary Diesel where ordinary heavy-duty type oil had allowed over four times more wear, or 0.0031 inches. The piston, head, and valves above, photographed after they had operated in the engine 965 hours under severely accelerated conditions on RPM DELO Supercharged, are typical of the excellent condition of parts and cleanliness maintained throughout the engine by this newly developed oil. All piston skirts were varnish-free, all oil-return holes open. Average ring-gap increase per 1000 hours was reduced from 0.01625 inches to 0.00350 by the use of RPM DELO Supercharged Lubricating Oil.

REMARKS: This new product in the RPM DELO line is specially compounded to solve ring-sticking, deposit formation, and excessive wear problems in Diesel engines operating in extra hard service. Many field tests have proved it to be particularly valuable where continuous high loads or high-sulphur content Diesel Fuels cause these conditions.

In the test reported here, the engine ran the full 965 hours at approximately 90% of governed full load engine rating. Drain periods were extended to 240 hours, however all 24 piston rings remained free, no troublesome deposits formed in the ring belt or on other parts, and oil compound depletion was negligible.

Besides providing unusual resistance to oxidation, the compounds in RPM DELO Supercharged Lubricating Oil clean existing gum and lacquer from parts, prevent internal rusting and bearing corrosion and stop oil foaming.

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★★★★★★ # SIX NEW STAR

NEVER HAVE SO MANY NEW UNITS OF ROAD MACHINERY MANUFACTURER

Four New Motor Graders

Now a Size to Fit Every Job and Budget!

★ **AD-4** 22,140 lbs. . . . 104 brake hp. . . . GM 2-cycle diesel engine.

★ **BD-3** 19,042 lbs. . . . 78 brake hp. . . . GM 2-cycle diesel engine.

★ **BD-2** 17,772 lbs. . . . 50.5 brake hp. . . . GM 2-cycle diesel engine.

★ **Model D** 8,500 lbs. . . . 34.7 brake hp. . . . Allis-Chalmers gasoline engine. A completely new low-cost motor grader with *exclusive* tandem drive. Engineered new from the ground up to bring you BIG grader design and performance advantages.

Note -- The popular Model AD-3, introduced just prior to the war, set the pattern for all these models. Provides 78 brake hp. . . . weighs 21,835 lbs. . . . has GM 2-cycle diesel engine.

Two New Diesel-Powered Tractors

★ **HD-19** With *exclusive* torque converter drive! Load and speed automatically balanced—up to 25% more work on many applications. Weighs 40,000 lbs. 163 hp.—GM 2-cycle diesel engine.

★ **HD-5** Weighs 11,250 lbs. 40.26 drawbar hp. — GM 2-cycle diesel engine. Simple to service, easy to operate . . . more work capacity. A great tractor with a fully matched Allied line.

These two new units, along with the widely used HD-7 and HD-10 tractors, complete the Allis-Chalmers crawler line.

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Here's proof that Allis-Chalmers plans far ahead to keep you ahead on your work! For it takes years of planning...building and rebuilding . . . testing and retesting . . . on each completely new tractor or motor grader.

What's more . . . A-C listens to you . . . incorporates *your demands*, as well as the forward thinking and design ideas of its own organization and Allied equipment manufacturers. This complete cooperation is behind every new Allis-Chalmers tractor or motor grader.

Compare the six new machines — feature by feature with any others — and you'll see why they are truly Star Performers. ASK YOUR ALLIS-CHALMERS DEALER FOR A DEMONSTRATION . . . NOW.

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TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Originator of the Torque Converter Tractor

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

November 15

Ga., Tignall—City, 24,430 lin. ft. 1½-to 6-in. watermains, tank foundation and one 50,000 gal. water tank. Plans deposit $15. Merritt & Welker, 206 Roswell St., Marietta, engrs.

November 16

Neb., Lincoln—City, City Hall, water treatment plant imprvs., at Ashland, $260,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 9/27/48.

LOW BIDDERS

Calif., Rio Linda—Rio Linda Water Dist., Rio Linda, Oct. 26, water distr. sys., from Cannell & Losch Eng. Contractors, 8302 E Center St., Paramount, **$121,475.** CD 10/5.

Mass., Attleboro—City, P. Wks. Dpt., City Hall, Oct. 24, furnishing, del. cl. pipe fittings, from Warren Foundry & Pipe Corp., 75 Federal St., Boston, **$136,646.** CD 6/4/48.

Tex., Colorado City—City, Oct. 20, Sect. 2, filter plant and pump station, from Henning & Payne, 857 Ross St., Abilene, **$134,417,** est. $145,000***Sect. 4, elevated steel water tank and tower, from Pittsburgh-Des Moines Steel Co., Praetorian Bldg., Dallas, **$55,400,** est. $90,000. Cancelled bids to have been opened Oct. 20, Sect. 3, pump and motors unit, **$40,000.** CD 9/27.

SEWERS, WASTE DISPOSAL

BIDS ASKED

November 15

N. C., Siler City—Town, W. O. Mann, clk., Siler City, 2.6 mi. 8 and 10 in. sanitary sewer mains; 2.1 mi. 6 and 8 in. watermains; enlarging filter plant from ½ to 1 m. g.p.d., filter plant equip.; 2 centrifugal pumping units. Plans deposit $25. The Linberg Engineers, Burlington, engrs. CD 9/13.

November 17

N. C., Charlotte—City, Henry A. Yancey, mgr., City Hall. New Sugar Creek Outfall Sewer from 800 ft. south of Princeton Ave. to existing Sugar Creek Sewage Treatment Plant, approx. 88,882 ft. Plans deposit $20. J. N. Pease & Co., 119½ E. 5 St., engrs. CD 5/1/46.

November 22

Ore., Portland—City, City Hall, 4 sewage pump stations, daily capacity 8,600,000 gal. Ben S. Morrow, city engr. CD 10/25/43.

November 23

Wash., Mount Vernon—City, City Hall, 33,410 ft. 8- to 30-in. sewers, $250,000. Plans deposit $25. Parker & Hill, Smith Tower, Seattle, Zone 4, engrs.

LOW BIDDERS

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan Ave., Oct. 27, Contr. 49-7 (CL-P) final tanks rehabilitation at Calumet Sewage Treatment Wks., from Independent Constr. Co., 1249 N. Clark St., **$422,405.** CD 10/26.

Mo., Kirkwood (St. Louis, Zone 22, P. O.)—City, Wm. C. Mason, clk., City Hall, 39 S. Kirkwood Rd., Oct. 20, 2 trunk line sewers to connect with proposed new sewage plant and to serve area around Greenbriar Country Club, incl. Sections C and D, Sect. C, from N. O. Sledd, 7954 Julian Ave., St. Louis, Zone 14, **$64,439;** Sect. D, from Tayon-Nash Constr. Co., 6625 Delmar Blvd., St. Louis, Zone 5, **$51,230.** CD 10/19.

●**New York**—President Queens Boro, 120-55 Queens Blvd., Kew Gardens, Zone 15, Oct. 25, sewers, 141 Ave., Carson St., Springfield Blvd., 14 Ave. etc., from T. & T. Contr. Co., 1066 66 St., Brooklyn, Zone 19, **$784,849;** Springfield Blvd., from Andrew Catapano & Co., 88-36 77 Ave., Glendale, **$948,864.** CD 10/19.

Tex., Highland Park—City, E. T. Earnest, mayor, Highland Park (Dallas), Oct. 21, 15- to 60-in. storm sewers, Unit 1 from Whittie Constr. Co., 3102 King Row, Dallas, **$77,053;** Units 2 and 3, from W. G. Cullum Co., Great Natl. Life Bldg., Dallas, **$111,809** and **$111,452** respectively. Est. $350,000. CD 10/10.

Va., Williamsburg—City, rejected bids Oct. 6, sewage treatment plant imprvs. LB **$137,774.** CD 10/19, under LB.

CONTRACTS AWARDED

●**Calif., San Francisco**—Dpt. P. Wks., City Hall, influent and effluent sewers at North Point Sewage Treatment Plant, to Charles L. Harney, 575 Berry St., **$1,039,903.** CD 10/25, under LB.

Kan., Augusta—City, sewage plant and outfall sewers, to Walters & Co., near U. P. Depot, Manhattan, **$113,310.** Bids 10/17. CD 9/19.

Man., Winnipeg—City trunk sewer in tunnel on Sinclair St., Inkster Blvd. and McPhillips Sts. new inlet into Jefferson Ave. sewer, to Nelson River Constr. Ltd., 101 Dawson Rd., Approx. **$429,693.** Bids 9/28. CD 9/16.

BRIDGES

BIDS ASKED

November 22

Fla., Miami—Dade Co. c/o County Engr., Courthouse, Maynada Street Bridge over Mahi Waterway, Plans deposit $15.

LOW BIDDERS

●**California**—State div. Hyw., Los Angeles, Oct. 27, 8 bridges and grading, surf. approaches 2.6 mi. between H St. in Chula Vista and 14 St. in National City, San Diego Co., from Charles MacCloskey Co., 112 Market St., San Francisco, and R. E. Hazard Constr. Co. & C. G. Willis & Sons, 2548 Kettner Blvd., San Diego, **$1,284,479.** CD 10/3.

California—State Div. Hys., Sacramento, Oct. 26, rein.-con. bridge and grading, plant mix approaches between 3.5 mi. north of Roseville and 0.9 mi. south of Sheridan across Pleasant Grove Creek, Rock Creek Yankee Slough and Big Yankee Slough, Placer Co., from Fredrickson Bros., 1259 65 St., Emeryville, **$116,387.** CD 10/3.

Iowa—State Hy. Comn., Ames, Oct. 25, 36x103 ft. I-beam bridge with two 4.5 ft. sidewalks, 36x1,434 ft. continuous I-beam bridge two 4.5 ft. sidewalks (overhead crossing) 276 ft. Ramp Street Lighting sys., grading, paving and storm sewers, etc. Iowa 14 on south Center St. in Marshalltown from Boone St. south 9,531 mi. to point south of Anson St., S.P. UG 23(4). Marshall Co., from Jensen Constr. Co., 1901 Easton Blvd., Des Moines, Zone 16, **$771,754.** CD 10/13.

●**Maryland**—State Hy. Dpt., Baltimore, Oct. 25, concrete substructure, 17 span 2,856 ft. bridge over Severn River on Annapolis Bypass, incl. 16 piers numbered 1 to 16, from north of Baltimore site of river approx. 1.25 mi. upstream from existing hy. bridge, Contr. No. AA 263-2-315, Anne Arundel Co., Alt. A; fdns. of Piers 4 to 10 inclusive, twin diam. steel shell caissons with concrete filled walls and open dredging well, from Foundation Co., 57 William St., New York, N. Y. **$4,402,700;** Alt. B, fdns. for Piers 4 to 10 inclusive of twin-conical prefabricated steel shell bases, supported on steel H piling, from Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y. **$3,349,800.** Moran, Proctor, Freeman & Mueser, 420 Lexington Ave., New York, N. Y., consult. engrs. CD 9/23.

●**New York**—Dpt. P.Wks., Albany, Oct. 26, construct 48 ft. span I-beam bridge carrying Route 23 over Huntersfield Creek at hamlet of Prattsville, incl. 0.06 mi. b. conc. paving on approaches, construct temporary detour bridge, etc., Greene Co. from Thomas P. Spagnoletta, 14 Denton Rd., Binghamton, **$70,444** est. $89,000***reconstruct 2 underpasses at tracks of New York Central R. R. where it passes over Curry Rd. and Guilderland Ave. (Route 7), near south city line of Schenectady, incl. 0.08 mi. c. conc. paving Curry Rd. and 0.19 mi. c. conc. Guilderland Ave., etc., Schenectady Co. and construct 98 ft. span I-beam bridge carrying County Road 111 over Rondout Creek at point approx. 1 mi. southwest of village of Accord and at junction of Route 209 with county road; incl. 0.07 mi. b. conc. paving on approaches, removing present bridge, etc., Ulster Co., from Serafini Constr. Co., Inc., Conklin Rd., Binghamton, **$199,496** est. $253,000 and **$154,091** est. $163,000 respectively***construct 92 ft. span I-beam deck bridge carrying tracks of New York Central R.R. over Route 12 C at point approx. 2 mi. southwest of intersection with Route 365; incl. 0.28 mi. 22 ft. c. conc. paving on approaches, temporary detour for railroad, etc., Oneida Co., from E. W. Husted, New Hartford, **$189,034** est. $230,000***construct 54 ft. span plate girder bridge carrying tracks of Delaware, Lackawanna & Western R. R. over Route 63 at village of Greigsville, incl. 0.13 mi. c. conc. paving, Genesee Way, Livingston Co., from Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, **$150,384** est. $190,000***preliminary constr. 0.28 mi. Williamsburg connection to Brooklyn-Queens Expressway extend from Washington Plaza to Marcy Ave. in Brooklyn, incl. viaduct footings, abutment and walls, grading, paving, utilities, alterations to elevated railroad structure, etc., Kings Co., from Horn Constr Co. Inc., 1776 Broadway, New York, **$698,407** est. $775,000. CD 10/10.

CONTRACTS AWARDED

Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, removing, replacing disintegrated c. conc. paving and lighting sys. and appurtenant work on 2 arch viaducts, Bridge No. AS-20-1260; Br. No. AS-20-262, U. S. R. 20, Ashtabula Co., to The Koski Constr. Co., 4544 Main Ave., Ashtabula, **$127,168.** Est. $124,820. Bids 10/19. CD 10/5.

Manitoba—Minister Dpt. P. Wks., Winnipeg, bridge on Provincial Trunk Hy. 3, Louise, to Harris Constr. Co., Ltd., 847 Ingersoll Ave., Winnipeg, **$75,000.** Bids 9/20. CD 9/16.

Manitoba—Dpt. P. Wks., ContWinnipeg, bridge over Roaring River and West Favel River, Minitonas, to Stratton Eng. Co., 543 Portage St., Winnipeg, **$70,000.** Bids 9/27.

STREETS AND ROADS

BIDS ASKED

November 16

†**Missouri**—Bureau P. Rds., General Services Admin., at Distr. Rangers Office, Fredericktown.

Madison Co.—grav. 2,450 cu. yd. Forest Hy., Proj. 37-A Part 1. Plans deposit $10.

LOW BIDDERS

California—State Div. Hys., Sacramento, Oct. 26, bit. 5.4 mi. between Orange Cove Rd. and White Deer Rd., Fresno Co., from R. A. Heintz, 8101 N. E. Union St., Portland, Ore., **$442,628.** CD 10/3.

Iowa—State Hy. Comn., Ames, Oct. 25, grading 9.977 mi. U. S. 30 from U. S. 218 east to Linn Co. line, S.P.F. 233 (2), Benton Co., from Central Constr. Co., Indianola, **$50,714;** grading 6.47 mi. Sn 1368, Pottawattamie Co., from Orville Eblen Constr. Co., Atlantic, **$55,-124.** CD 10/13.

Maryland—State Rds. Comn., Baltimore, Oct. 25, grading, drainage, wid'n., resurf. 2.338 mi. along existing roadway and relocation on U. S. Route 50, from Mt. Holly, extend. westerly approx. 1.27 mi. east of Cambridge, Contr. D-211-2-115, Dorchester Co., from Thomas A. Reilly Co., 62 Reaney St., Chester, Pa., **$284,232;** grading, drainage, wid'n., resurf 2.132 mi. along existing roadway, and several relocations along U. S. Route 13, from E. State St. in Delmar, exten. southeasterly toward Salisbury, Contr. WP-133-6-115, Wicomico Co., from H. Lay Phillips & Co., Salisbury, **$164,671.** CD 10/20.

New York—Dpt. P. Wks., Albany, Oct. 26, reconstruct 2.12 mi. Route 5 (Hamburg Turnpike) in city of Lackawanna with b. conc pavement exten. from point 2,100 ft. south of south city line of Lackawanna northward through city to Fifth St., etc., Erie Co., from Main Constr. Corp., Depew, **$872,261.** Est. $881,000. CD 10/10.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, Oct. 25, port. stabil. base course and bit. surf. tr. 15.94 mi. four sects. county roads, Proj. 5-9-42-201, Alamance Co., from Nello L. Teer Co., Box 1131, Durham, **$233,731.** Est. $250,000-$300,000. CD 10/18.

Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 5, cancelled bids to have been

(Continued on page 88)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

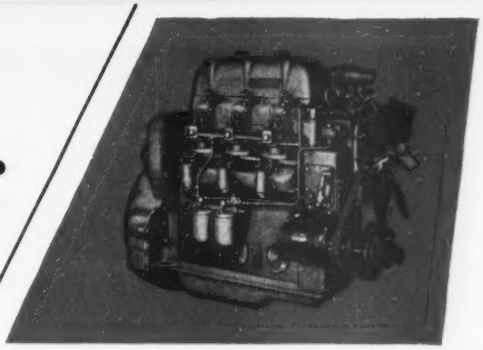
Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Proved...

for your

tough jobs!

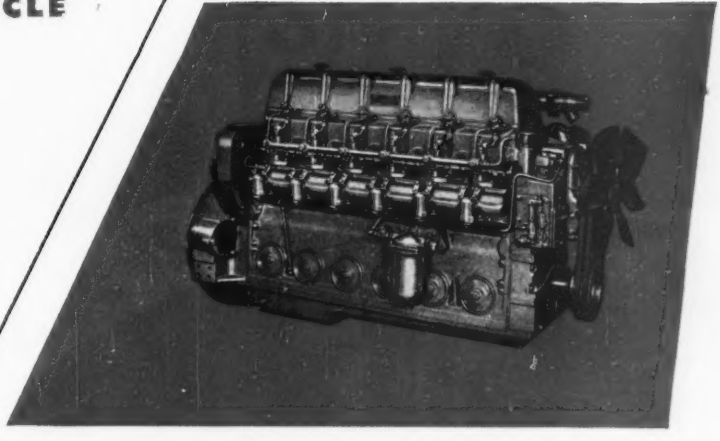


Model 387-C 3 cylinder

P&H DIESELS

2 CYCLE

Model 687-C 6 cylinder



Built for the toughest job known

Now — the new P&H Diesels are ready — after years of intensive research, development and testing in the most grueling of diesel applications — excavator service.

The new P&H Diesels introduce a number of advancements in design — in performance — and in easier servicing — which will be welcomed in many fields of diesel usage, mobile, stationary and marine.

Literature is now available. Address **Harnischfeger Corporation,** Diesel Division, **Port Washington, Wisconsin.**

P&H DIESEL DIVISION HARNISCHFEGER CORPORATION

EXCAVATORS · ELECTRIC CRANES · ARC WELDERS · HOISTS · WELDING ELECTRODES · MOTORS

K&E partners

For 82 years K&E equipment and materials have been

PHOENIX WYTEFACE Non-metallic Woven Tapes

Trade Mark U. S. Pat. 2,321,920

OVER 3 TIMES LONGER WEAR. An enormous stride. A radical development. The new *non-metallic* PHOENIX WYTEFACE, as one highway engineer puts it, *"has at least three times the life of ordinary metallic tapes"*. Drastic field tests — in extremes of climate, in water and mud, over stones and rocks, under truck wheels, through brush and barbed wire —have established that fact.

Here is the reason. PHOENIX WYTEFACE is a weave of amazingly strong synthetic yarns—a scientific wartime development—completely covered and protected by a special tough plastic coating that is not affected by water, is not brittle and will not flake.

MORE ACCURATE. PHOENIX WYTEFACE will stand up to repeated soaking and drying and still maintain a dimensional stability substantially higher than that of ordinary so-called "metallic" tapes.

HIGHER DIELECTRIC CONSTANT. PHOENIX WYTEFACE Woven Tapes are entirely non-metallic —a feature that is important to Power and Utility Companies and to anyone working near high tension circuits.

EASY TO READ AND CLEAN. The clear black and red markings on the white background are easy to read. The surface is easily wiped clean.

Ask your K&E Distributor or any K&E Branch to show you the new PHOENIX WYTEFACE non-metallic Woven Tape, or write on your letterhead for a sample length to Keuffel & Esser Co., Hoboken, N. J.

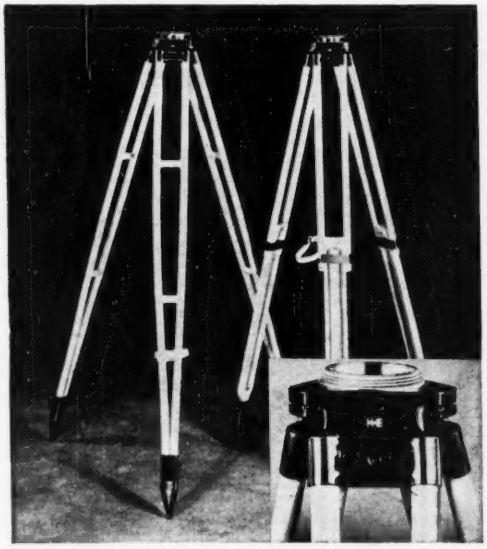
in creating . . .

partners of the draftsman, the engineer and the scientist in shaping the modern world

NEW K&E WIDE FRAMED TRIPODS GIVE MAXIMUM STABILITY

The wide framed leg construction of these new K&E tripods and the wide, all-metal hinges joining the legs and head result in great torsional stability. This makes the instrument much steadier—less vibration—in windy weather. Legs are straight grained maple. They are easy to plant firmly, because of their long steel "Stoodite" tipped shoes and large spurs—the kind a man can get his foot on, even with boots or galoshes. The head fits all instruments with the standard 3½ inch by 8 threads. K&E Wide Framed Tripods are made in stiff leg and extension styles.

Ask your K&E Dealer or Branch to show you these tripods, or write to Keuffel & Esser Co., Hoboken, N. J.

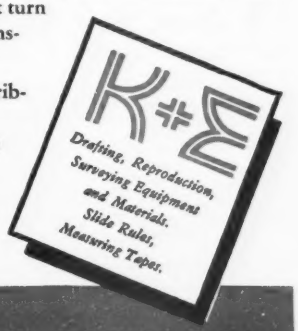


ALBANENE* TRACING PAPER WILL NOT DETERIORATE WITH TIME

ALBANENE Tracing Paper is made from a 100% pure rag base. Its fine printing transparency is due, not to oils that leak and "bleed," but to a synthetic transparentizer that K&E developed specially for this purpose. Prints made today from drawings made on ALBANENE years ago, prove conclusively that ALBANENE does not turn brittle nor lose its transparency with time.

Ask your K&E Distributor or any K&E Branch for a sample or write to Keuffel & Esser Co., Hoboken, N. J.

*Trade Mark ®



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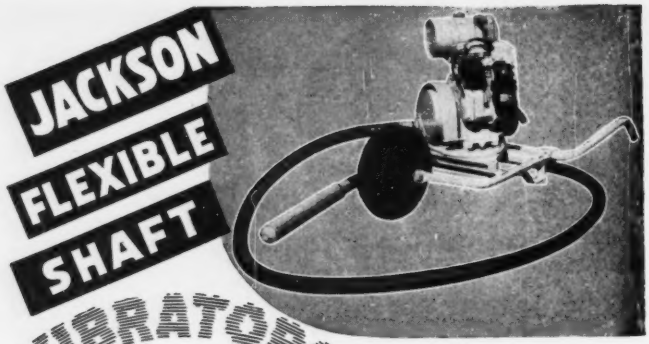


JACKSON FLEXIBLE SHAFT VIBRATORS

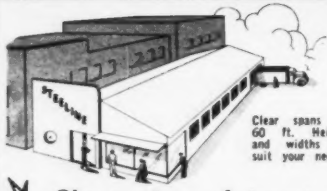
Excellent FOR BOTH THICK AND THIN CONCRETE SECTIONS

This husky, self-contained, trouble-free unit, powered by a thoroughly dependable Wisconsin engine with automatic clutch, may be had with three vibrator heads for thick and thin sections, flexible shafting (½" core) in 7 to 14' lengths up to 28 ft. Full swivel, dirt-proof base. Variable speed control up to 7500 V.P.M. Wheelbarrow with drop handles is optional.

The JACKSON line contains the ideal vibrator (internal or external, hydraulic, flexible shaft engine or electric motor driven) for every type of concrete construction. Write for information on the type you are interested in.

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

For *LOW COST FAST* CONSTRUCTION



Steeline means VALUE

Clear spans to 60 ft. Height and widths to suit your needs.

ALL STEEL BUILDINGS

Check these Advantages —

- Complete "packaged" building from one source cuts construction cost and time.
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- All steel construction for fire safety, long life and low maintenance.
- Standard designs for buildings and accessories are flexible to meet most requirements.
- Good delivery—we will generally have all material on your property by the time foundation and floor have been completed.

Roof Systems for Masonry Wall Construction Also Available

I am interested in more information on:

(a) Steeline All-Steel Buildings
(b) Steeline Roof Systems For Masonry Wall Construction

☐ Width.....
☐ Length.....
☐ Height.....

Name .....

Company .....

Address .....

CAREW STEEL PRODUCTS CORPORATION YORK, PENNA.

(Continued from page 84)

opened Oct. 19, 1.391 mi. Type T-50 in B-71 and structure, C. R. 39, Cuyahoga Co.; 1.975 mi. Type T-50 on B-20, C. R. 10, Lucas Co.; rejected bids Oct. 19, 0.605 mi. Type T-71, U.S.R. 25, Lucas Co., **$254,300**; 2.743 mi. Type T-35, S.R. 15, S.R. 18, U.S.R. 24, S.R. 66, Defiance Co., **$126,720**. CD 10/5.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, Oct. 28, c. conc. pavement divided highway, rein.-con. paving; bit. surf. crushed aggregate base, construct rein.-con. bridge superstructure on existing abutments, incl. 7 rein.-con. structures 25,848 ft. L.R. 117, Sec. 7, T.R.U.S. 119, Hempfield Twp., Youngwood and S. Greensburg Boros, Westmoreland Co., from Adam Eidemiller, Inc., Greensburg, **$1,686,337***** rein.-con. paving, bit. surf. crushed aggregate base; construct concrete T-beam and concrete deck I-beam bridge and bit. surf. for adjustment 23,016 ft. L.R. 132, Sec. 8, 23083, Sec. 1, 23021, Sec. 1, T.R. 352, from point in Parkside Boro to Black Horse Delaware Co., from Berlanti Constr. Co. Inc., 15 Oakland Ave., Harrison, N. Y., **$849,425*****wid'n. pavement with concrete base and crushed aggregate base, bit. surf. new base and existing pavement, 6.893 ft. L.R. 262 (3A); 62 T.R. 80; 219, from near Indiana-Clearfield Co. line, northerly, Banks and Burnside Twps., Indiana and Clearfield Counties, from L. R. Owen Co., R.D. 2, Johnstown, **$90,560*****wid'n. pavement with crushed aggregate base, and build-up and surf. existing pavement and proposed wid'n. with crushed aggregate base and bit. surf., wid'n. existing pavement with c. conc. base; bit. surf. new base and existing pavement, surf. roadway and alteration of sidewalk on rein.-con. and steel viaduct, construct crushed aggregate base with bit. surf., exten. 2 rein.-con. structures 17,490 ft. L.R. 262 (R-4) T.R. 80 from point in Clymer Boro, northeasterly, Clymer Boro, Cherryhill and Green Twps., Indiana Co., from Irving N. Loomis, 69 S. Main St., Montrose, **$279,612***** bit. surf. native stone or crushed aggregate base, wid'n. pavement with native stone or crushed aggregate base, bit. surf. new base and existing pavement 7,371 ft. L.R. 40132 (1), Larksville and Edwardsville Boros., Luzerne Co., from H. G. Coon Constr. Co., 278 Union St., Luzerne, **$83,469*****rein.-con. paving, incl. construct rein.-con. by. underpass bridge, construct concrete deck I-beam bridge and bit. surf. aggregate base, 14,931 ft. L.R. 169 (6), from point in Mt. Pocono Boro eastwerly to the intersection of L.R. 171, Mt. Pocono Boro, Paradise Twp., Monroe Co., from F. D. Kessler, Inc., Northumberland, **$430,216*****construct divided hy. consisting concrete base with bit. surf. 894 ft. L.R. 6705 (4-B), from intersection of 11 and Vine Sts. to intersection of 9 and Vine Sts., city of Philadelphia, Philadelphia Co., from Frank Mark Co., Caster Ave. and Wingohocking St., Phila., Zone 24, **$318,684**. CD 10/18.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, paving various locations, Schedules B-4 and R-1, from Union Paving Co., Broad and Stiles Sts., **$54,559** and **$59,437** respectively*** Schedule A-2, from General Asphalt Paving Co., 6851 Rising Sun Ave., **$109,123*****Schedules R-3 and C-2, from Eastern Paving Co., Packard Bldg., **$58,150** and **$112,934** respectively. CD 10/30/44.

Pa. Phila.—Dpt. P. Wks., City Hall Annex, paving various locations, Schedule A, from Harry C. Erb, 1505 Race St., **$108,949**; Schedule R-3, from Eastern Asphalt Co., Packard Bldg., **$62,155**, Dudley T. Corning, c/o owner, highways chief.

CONTRACTS AWARDED

New York—Bureau Contracts & Accounts, Albany, modernizing Route 9 and connections to approaches to Bear Mt. Bridge and Parkway system, north of Peekskill, Westchester Co., to A. E. Ottaviano, 50 Brook St., Croton on Hudson, **$718,575**. Bids 9/14. CD 9/19, under LB.

Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, 11.727 mi. Type T-35, U.S.R. 30 N, Hancock Co., to The Ohio Eng. Co., 105 Sixth St., Lorain, **$153,981**, est. $211,000***12.183 mi. Type T-35, U.S.R. 30, Van Wert Co., to Churchill Constr. Co., 1126 State St., Lima, **$186,697**, est. $274,830***9.646 mi. Type T-21 on B-11, S.R. 260, Washington Co., to Harley E. Mason & Co., Marietta, **$55,478**, est. $80,700***2.403 mi. Type T-35 and T-71, S.R. 7, Gallia Co., to The Pierce Constr. Co., 3005 Bellevue Rd., Toledo, **$339,003**, est. $407,200. Grand total $715,159. Bids 10/19. Awarded 10/19. CD 10/5.

●**Oregon**—Bureau Pub. Roads, General Services Admin., Broadway and Oak Bldg., Portland, grading, oiling 6.2 mi. Pacific Hy., Douglas Co., to Kuckenberg Constr. Co., 11104 N. E. Holman St., Portland, **$1,182,6****1. Bids 9/29, awarded 10/26. CD 10/4, under LB.

Oregon—State Hy. Comn., Salem, grading, surf., bit. macad. 5.22 mi. Dodson-Bonneville sect. of Columbia River Hy. FAP FI-248 (15), Multnomah Co., to Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., **$998,675**. Bids 9/30, awarded 10/26. CD 9/26, under LB.

Utah, Ogden—City, constructing curb and gutter in Dist. 140, to Waterfall Constr. Co., 1685 Wall Ave., **$187,000**. Bids 9/20.

Wash., Everett—Everett Housing Auth., Everett, c. conc. walks, curbs, street grading, asph. surf. site grading and landscaping, etc., at Baker Heights Housing, to Associated Sand

(Continued on page 92)

The New "201" CRUSHING and SCREENING PLANT

The shovel-loading hopper is fitted with inclined grizzly, and mechanical feeder. All machines [illegible] and V-belt driven. Motion also full-enclosed brakes.

You'll Like Its—

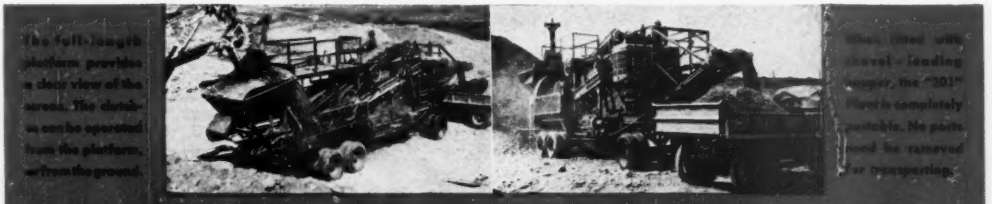
HIGH OUTPUT. With its jaw and roll crushers, the "201" is capable of producing especially large amounts of ¾" and smaller product.

CHOICE OF FEED. The "201" may be had with either shovel-loading hopper, or swivel drive for separate feed conveyor.

READY PORTABILITY. The "201" is of a size and weight that can be transported over most highways without a special permit.

ENCLOSED BRAKES. Hydraulic brakes, mounted on the *outside* of the wheels, are dustproof and watertight.

TOP-NOTCH ENGINEERING. All bearings of anti-friction type; all principal units, shaft and V-belt driven; all moving parts well protected by guards.



The full-length platform provides a clear view of the screen. The clutch can be operated from the platform, or from the ground.

When fitted with shovel-loading hopper, the "201" Plant is completely portable. No parts need be removed for transporting.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

THIS HEAVY-DUTY OIL HELPS YOU CUT

DELVAC OILS

PROVED **performance under toughest conditions!**

APPROVED **by 28 crane, shovel and dragline makers— 10 tractor and 45 bus-truck builders!**

● Delvac "900 Series" Oils are specially designed to keep your truck, tractor and other automotive-Diesel and carburetor-type engines on the job, working full time.

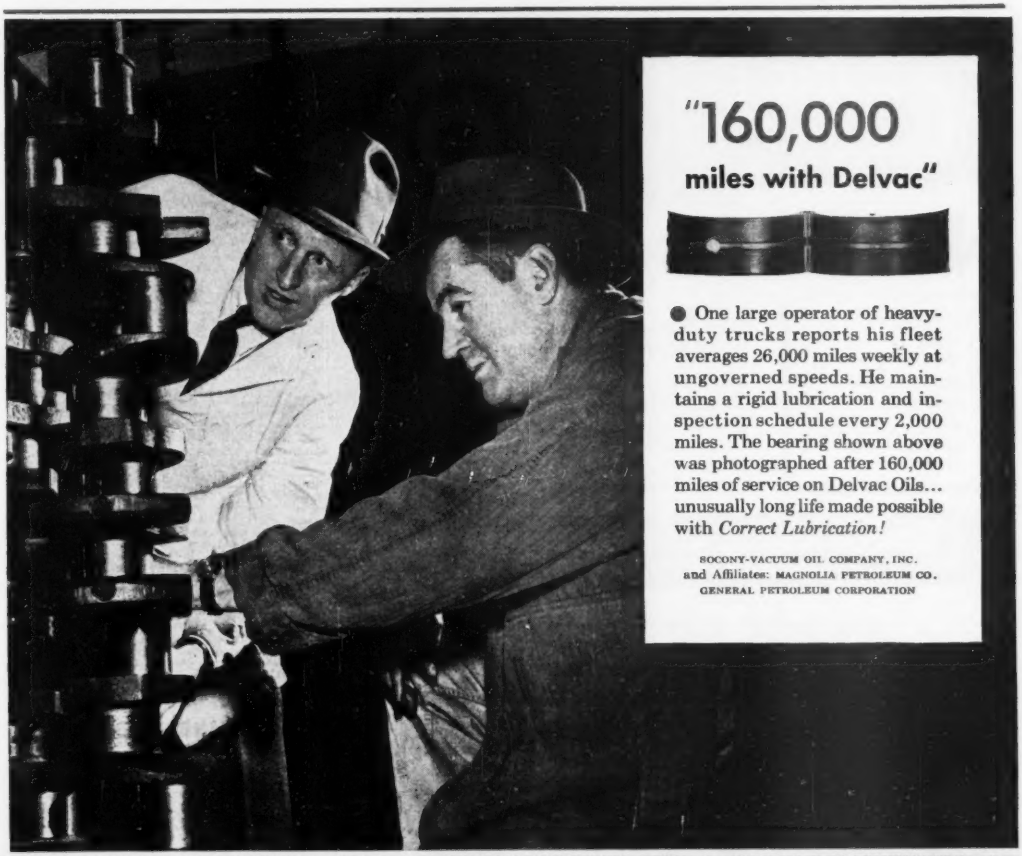
They're famous *heavy-duty* oils—give full engine protection throughout the entire operating temperature range...possess rich lubrication films that provide full piston ring seal, minimize blowby, reduce friction.

Delvac "900 Series" Oils combine exceptional oxidation resistance with special detergent properties to help keep engines clean. Contaminants remain in suspension, are easily removed by periodic crankcase draining. High resistance to chemical change protects hard alloy bearings against corrosion.

* * *

Get *correct lubrication!* Use Delvac Oils!

DOWN-TIME . . . BEAT CONTRACT DEADLINES!



"160,000 miles with Delvac"

● One large operator of heavy-duty trucks reports his fleet averages 26,000 miles weekly at ungoverned speeds. He maintains a rigid lubrication and inspection schedule every 2,000 miles. The bearing shown above was photographed after 160,000 miles of service on Delvac Oils... unusually long life made possible with *Correct Lubrication!*

SOCONY-VACUUM OIL COMPANY, INC.
and Affiliates: MAGNOLIA PETROLEUM CO.
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SOCONY-VACUUM

Contractors' Service

Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

ACCURATE
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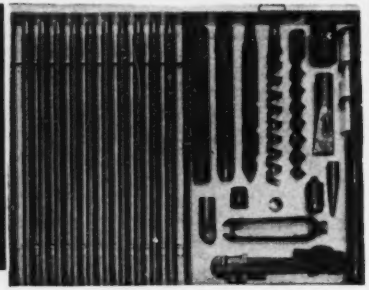


ACKER SOIL SAMPLING KIT

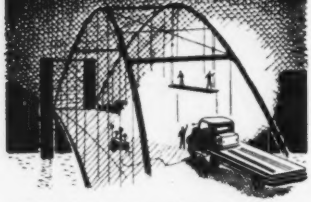
- Twelve soil and earth sampling tools in handy steel box.
- Can be carried in any automobile.
- Depths limited only to driving power of sledge or maul.

• Thirty years' experience has proved these tools will recover accurate samples from practically all earth materials.

• MANY USES include aluminum silicate deposits—brick and clay materials—foundation test borings—gold bearing sands—kaolin and clay for ceramics—sand and gravel pits—subgrade testing for highways and airfield runways—base materials.

ACKER DRILL COMPANY, INC.
SCRANTON 3, PA.

Have Power Where You Need It!



Fairbanks-Morse generating sets enable you to have power, light and heat where you need it. These popular units are widely used on construction jobs, farm field operations, in logging camps; for roadside restaurants, stores, and used car lots; to illuminate baseball and football fields; for resorts and private homes. Fairbanks-Morse generating sets are available in capacities from 350 to 35,000 watts. For complete details, see your nearest Fairbanks-Morse dealer or mail the coupon today.

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Chicago 5, Illinois

Gentlemen: Please send full information about Fairbanks-Morse generating sets.

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Address.....RD.....
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GET TWICE THE LIFE AND SAVE WITH
"GUNITE"

Investigate its possibilities. Pneumatically Applied to Any Surface Any Thickness. Bunker Stacks, Tunnels, Reservoirs, Sewers, Walls, Tanks.

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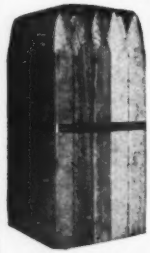
High Grade Hardwood



SURVEYOR STAKES
Stained Yellow Bound with Steel Strapping

	Per 100	In 1000 lots Per 100
1x2—12"	$5.05	$4.60
1x2—15"	5.15	4.65
1x2—18"	5.25	4.75
1x2—24"	6.20	5.65
1x2—30"	8.80	8.00
2x2—12"	6.50	5.90
2x2—15"	8.15	7.00
2x2—18"	8.70	7.90
2x2—24"	10.45	9.50
2x2—36"	15.00	3.65

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

& Gravel Co., Everett, **$84,400.** Est. $85,000. Bids 10/26. CD 10/19.

EARTHWORK, WATERWAYS

BIDS ASKED

November 15

†**Wyoming**—Bureau Reclamation. Casper, notch measuring control structure, Casper, Canal, Station 32 plus 08 to Station 32 plus 30, Kendrick Proj., near Alcova, approx. 32 mi. southwest of Casper, Spec. 2818. L. N. Mc Clellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

November 17

†**Georgia**—U. S. Eng., P. O. Box 1169, Mobile, 7, Ala., constr. sub-impounding dam across Proctor Creek near Acworth, Cobb Co., Serial No. CIVENG-01-076-50-31. CD 10/26.

November 22

†**Florida**—U. S. Eng., P. O. Box 4970, Jacksonville, constr. levee L-35A, Central and Southern Florida Flood Control Proj., Inv. No. CIVENG-08-13-50-18. CD 10/12.

†**Oregon**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., channel and levee along Walla Walla River in vicinity of Milton, Umatilla Co.; CIVENG-45-164-50-52.

LOW BIDDERS

●†**California**—Bureau Reclamation, Dpt. Interior, Tracy, Oct. 26, earthwork, concrete lining and structures for canal, Delta-Mendota Canal, 7 mi. southwest to 6 mi. south of Dos Palos, Central Valley Proj., Merced Co., from Morrison-Knudsen, 411 W 5 St., Los Angeles, and M. H. Hasler, Box 387, Santa Ana, **$2,178,889.** CD 9/27.

●†**Kentucky**—U. S. Eng., 303 U. S. Court House, Nashville 1, Tenn., Oct. 27, construct Wolf Creek Dam Powerhouse, containing six 45,000 (T) generators, approx. 10 mi. north of Albany, Russell Co., Serial No. CIVENG-40-058-50-3. From E. J. Albrecht Co., 2626 W. 26 St., Chicago, Ill., **$5,558,744.** CD 10/18.

†**Louisiana**—U. S. Eng., foot Prytania St., New Orleans, Oct. 26, constr. and sinking approx. 2,550 sq. yd., framed willow mattress revetment on Mississippi River, incl. 2,040 tons rock ballast, CIVENG-16-047-50-94, from Sam Carlin, Box 1895, Berwick, **$179,775.** CD 10/11.

New York—Dpt. P. Wks., Albany, Oct. 26, furnishing, installing steel lower lock gates at 4 locks on Waterford flight of the Erie Canal near Waterford, incl. lowering of sills, removing present gates and misc. work, Saratoga Co., from Bethlehem Steel Co., E. 3 St., Bethlehem, Pa., **$283,788.** Est. $257,994. CD 10/10.

CONTRACTS AWARDED

●†**Idaho**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., tunnel for Lucky Peak Dam on Boise River, near Boise, Serial No. CIVENG-45-165-50-20, to Puget Sound Bridge & Dredging Co., 2929 16 Ave. S. W. Seattle, Wash., and Macco Corp., Paramount, Calif., **$1,168,755.** Bids 10/20. CD 10/25, under LB.

AIRPORTS AND AIRBASES

BIDS ASKED

November 15

●**O., Cleveland**—AIRPORT CONSTRUCTION—National Advisory Com., on Aeronautics, Brookpark Rd., 4,750 cu. ft. rein.-con. fuel pump house bldg. and equip. housing two 200 gal. p.m. low pressure fuel pumps and controls; approx. 31,000 cu. ft. rein.-con., structural steel cooling tower water pump house bldg., and 5 brick bldgs., construct four 30x50x1 ft. thick concrete slabs for fuel tank foundations, and 5 excavations, back fill 21 tanks providing finish of 8 ft. above grade; fabricate and install approx. 150 tons of 13 ft. diam. steel pipe with supports; fabricate and install 125 tons 48 in. diam. pipe with supports and 40 ton 30 in. diam. pipe; fabricate and install complete with valves and anchors 250 ton 48 in. diam. steel pipe, 45 ton 36 in. diam. steel pipe and 20 ton 18 in. diam. steel pipe; construct general electrical control for cooling tower and fuel pumping equip. install and connect transformers, switchgear, cables conduit for control of ten 75 hp. fans two 700 hp. and one 150 hp. water pumps, four 100 hp. fuel pumps. Approx. $50,000 each CD 6/29.

LOW BIDDERS

●**Tex., Fort Worth**—AIRPORT—City W. O. Jones, mgr., Oct. 27, Contr. 2, runway paving at Fort Worth International Airport, from T. L. James & Co. Inc., Kenner, La. **$1,557,454.** Approx. $1,000,000. CD 10/5.

†**Va., Gravelly Point**—STEAM LINE—Pub. Bldgs. Admin., General Services Admin., 18 and Sts. N. W., Wash. 25, D. C., Oct. 27, 10 in. steam line and oil storage tank at Washington Natl. Airport, Proj. No. 44-094-7, from John P. Evans, Inc., 2051 L St. N. W. Wash. D. C., **$110,500.** CD 10/17.

CONTRACTS AWARDED

N. Y., Idlewild—TERMINAL BLDG.—Port of New York Auth., 111 8 Ave., New York, Zone 11, expansion temporary terminal bldg., Contr. No. NYA-106 to Wortmann & Sons, 109 E. 20 St., New York, Zone 16, **$533,251.** Bids 10/4. CD 10/7, under LB.

go these

RIC-WIL

PREFABRICATED PIPE UNITS

The most recent extension of the Ohio Edison Company's Central Heating System in Akron, Ohio was speeded to completion by the installation of these "around-the-corner" Ric-wiL Pre-fabricated, Pre-insulated Pipe Units.

With 14" pipe and insulation housed in corrugated ingot iron conduit, factory prefabricated to the above configuration, these units are among the many Ric-wiL sub-assemblies forming the 975 foot artery which supplies steam from Ohio Edison's Beech St. Plant to various distribution centers.

For more complete detailed information on Ric-wiL Insulated Piping Systems write: The Ric-wiL Company, Cleveland, Ohio, Department 12U.

Specified Ric-wiL Units exemplify Ric-wiL's scientific approach to piping problems with resultant efficiency and economy. Ric-wiL Units are accurately designed and shaped to permit free flexure of entire piping systems in all planes with a minimum lineal footage of piping.

Prefabrication is under rigid engineering control with exact adherence to specifications, assuring simplified, low-cost installation and dependable, uninterrupted service with long life and outstanding durability.

RIC-WIL

INSULATED PIPING SYSTEMS

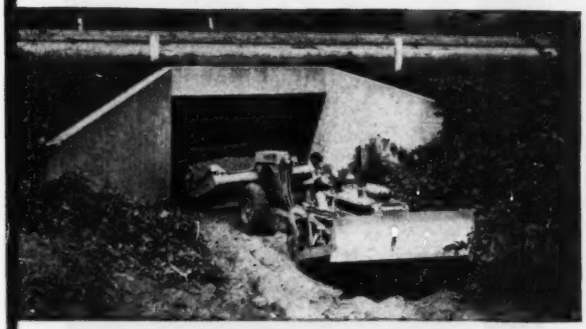
THE RIC-WIL COMPANY • CLEVELAND, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

"Caterpillar" announces a NEW earthmoving power package

Working on 500-foot one-way hauls, this "Caterpillar" No. 40 Scraper loads an average of 46 yards per hour—360 cubic pay yards per 8-hour day. Proper blade angle and 43 drawbar hp. pile in heaping loads in less than a minute.

YOU may have thought of the "Caterpillar" Diesel D4 Tractor as a "small" unit. But there's nothing small about its production when teamed up with the "Caterpillar" No. 4A Bulldozer and the new No. 40 Scraper. Here's perfectly matched equipment that fits into any number of construction and maintenance programs. Some of its advantages are:



Ideal for the tough jobs, this "Caterpillar" package is small enough to get in and out of tight spots, yet a heaped scraper rating of 4½ cubic yards is an assurance of high production.

1 Low first cost and low operating cost, coupled with high production capacity.

2 An all-"Caterpillar" team, with units designed for each other. One dealer's service keeps all equipment in top working condition.

3 All-hydraulic controls. A handy changeover valve next to operator permits fast switching from 'dozer to scraper. One man can easily disconnect scraper from tractor.

4 The 'dozer blade can be angled or tilted to suit all needs.

5 Scraper blade designed for grader-smooth spreading close to vertical banks or structures.

6 'Dozer-type ejection on the scraper pushes load forward and under the blade, spreading smoothly.

7 Rear tires mounted inside the cut allow loading or spreading close to vertical banks or structures.

Write today for full information on this money-saving, money-making earthmoving "package."

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Specifications

"CATERPILLAR" DIESEL D4 TRACTOR

Drawbar Hp.	Belt Hp.	Weight*	No. Forward Speeds	Drawbar Pull** in Low Gear
43	48	10,060 lbs.	5	9450 lbs.

*Standard 48" tracks. **At rated engine speed.

"CATERPILLAR" NO. 40 SCRAPER

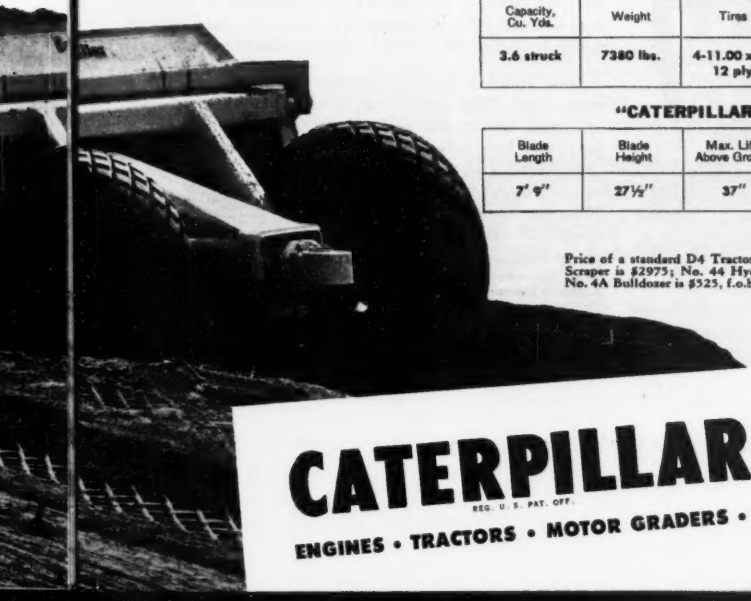
Capacity, Cu. Yds.	Weight	Tires	Blade Width	Overall Length	Width
3.6 struck	7380 lbs.	4-11.00 x 20 12 ply	6'	21'	7' 5½"

"CATERPILLAR" NO. 4A BULLDOZER

Blade Length	Blade Height	Max. Lift† Above Ground	Max. Drop Below Ground	Max. Blade Tilt	Blade Angle
7' 9"	27½"	37"	13¾"	6"	25°

†With blade angled 25°

Price of a standard D4 Tractor is $4425; No. 4A Bulldozer is $1380; No. 40 Scraper is $2975; No. 44 Hydraulic Control for use with No. 40 Scraper and No. 4A Bulldozer is $525, f.o.b. Peoria, Illinois, subject to change without notice.



CATERPILLAR DIESEL

REG. U. S. PAT. OFF.

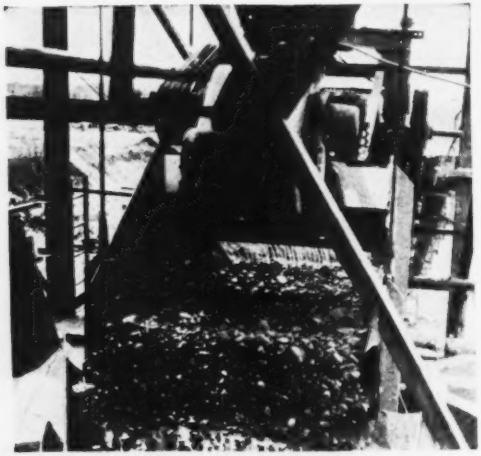
ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

In bank run aggregate . . .

Dual Impact Action does it again!

". . . production capacity is approximately twice that of the two crushers replaced . . . even though it is operating on ten less horsepower." That's what Robert Coe of Basic Construction Materials, Chillicothe, Ohio says about New Holland's Model 2020 Double Impeller Breaker . . .

1. "We are using the breaker to crush bank run aggregate, consisting of sand and gravel, blue and red granite and some common niggerheads."

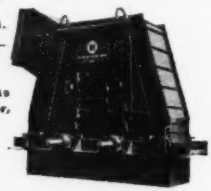


2. "Sand is screened off before it reaches the breaker but all other material passing a 12" opening is fed into the crusher."

3. "We are producing Ohio Specification, size Nos. 9, 6, 46, 4 and 3, in only one pass through the breaker. Production ranges from 100 to 165 tons per hour using no more than 40 H. P. per impeller."

NEW HOLLAND Model 2020 Breaker . . . "combines the operation of primary and secondary crushing . . . increases our percentage of crushed which is desirable in Ohio. It acts as a soft-stone eliminator . . . and produces a cubical product that stands up well under abrasion tests."

New Holland Double Impeller Breakers come in 4 sizes—1212, 2020, 3030, 5050; are easily adapted to open or closed circuit. Model 2020 operated by Basic for a year and a half, takes all sizes passing 20" opening. Yields clean, cubical aggregate minus 1" in one pass. All steel construction. Minimum horsepower required—maximum output assured.



SEE FOR YOURSELF. Write Department E-110 for complete information—name of distributor, location of nearest installation.

NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of The Sperry Corp.

(Continued from page 92)

PUBLIC BUILDINGS

BIDS ASKED

November 16

Mass., Norwood—HOUSING—Town of Norwood Housing Auth., 32 Municipal Bldg., 75 unit, wood and frame veterans housing, northeasterly of Roosevelt Ave. $800,000. Plans deposit $50. H. J. Korslund, 506 Washington St., archt. Arthur & Sydney Shurcliff, 14 Beacon St., Boston, engrs. CD 11/10/45.

Neb., Lincoln—BOILER PLANT—State Bd. Control, Lincoln, heating and boiler plant at Lincoln State Hospital, $100,000. Fritz Craig, 1st Natal. Bank Bldg., archt. CD 4/21.

November 22

Calif., Eldridge—SLAUGHTER HOUSE—State Div. Architecture, P. Wks. Bldg., Sacramento, 1 story, concrete, concrete block slaughter house, incl. refrigeration work, at Sonoma State Home. Plans deposit $25. Anson Boyd, Sacramento, State archt.

●**N. C., Greensboro** — DORMITORY — State Agricultural & Technical College for Negroes, Greensboro, 160,000 sq. ft. mens dormitory, 5 wings joined together with court leading to main entrance. Approx. $1,500,000. McMinn & Norflett & Albert C. Woodruff, Greensboro, engrs. CD 10/11.

LOW BIDDERS

Colo., Denver—SCHOOL—School Dist. 1, City and Denver Co., 414 14 St., Oct. 26, general contract, 1 story, 13 classroom Stephen Knight School, from Platt Rogers, Inc., 944 Osage St., **$524,528.** CD 10/5.

Conn., Bristol—HOUSING—City of Bristol Housing Auth., Fred O. Zurrell, chn., Oct. 25, 40 duplex frame houses, MR-21, 80 family units, Cambridge Park, from De Ponce Constr. Co., 110 Colonial Ave., Bridgeport, **$792,450.** CD 10/20.

Conn., West Hartford—SCHOOL—Town of West Hartford, Dr. E. M. Thorne, Supt. Schools, Bd. Educ., Hartford, Oct. 21, 1 story, bamnt., Lloyd H. Bugbee School, Asylum Ave., from A. F. Peaslee, 15 Lewis St., Hartford, **$713,117.** CD 10/17.

†**D. C., Wash.**—WHITE HOUSE—Pub. Bldgs. Admin., F St. between 18 and 19 Sts. N. W., Oct. 28, renovating, modernizing White House, from John McShain, Inc., 1901 P. St. N. W., **$100,000** cost-plus-fixed-fee contract. Est. cost $4,160,000. CD 10/13.

Idaho, Pocatello—LIBERAL ARTS—State Dpt. P. Wks., Boise, Oct. 28, liberal arts bldg. at Idaho State College, from Brennan & Cahoon, Pocatello, **$530,854.** CD 10/17/44.

●**Mass., Quincy**—HOUSING—City of Quincy Housing Auth., City Hall, Oct. 26, housing Proj. 200-1, Germantown Sailors Snug Harbor, from Jefferson Constr. Co., 75 First St., Cambridge, for Zone 1 **$590,198**; Zone 6 **$363,198**; Zone 7 **$847,198*****from Platt Constr. Co., Inc., 99 First St., Cambridge, for Zone 2 **$454,000**; Zone 4 **$484,000*****from Frankini Constr. Co., Inc., 26 Mystic Ave., Medford, for Zone 3 **$549,000*****from Hayes & Watkins Constr. Co., 12 Cottage St., Brockton, for Zone 5 **$288,660*****from H. N. Worthington Co., 159 Newport Ave., utilities **$178,000.** CD 9/29.

Mass., Woburn—HOUSING—City of Woburn Housing Auth., City Hall, Oct. 26, 60 unit veterans housing, from Jefferson Constr. Co., 75 First St., Cambridge, **$563,198.** CD 10/12.

†**N. M., Albuquerque**—HEATING PLANT—U. S. Eng., P. O. Box 1538, Oct. 20, 7,800 sq. ft. steel frame central heating plant, underground storage tanks, Sandia Base, Serial No. 291-50-97, from Utah-Leavell & Co., P. O. Box 1451, El Pasa, Tex., **$508,883.** Est. $200,000. CD 9/28.

N. Y., Ogdensburg—STAFF HOUSING—Bureau Contracts & Accounts, Albany, received no bids Oct. 26, Staff Housing Bldgs. 88 and 89, St. Lawrence State Hospital CD 10/10.

N. Y., Oswego—INDUSTRIAL—Bureau Contracts & Accounts, Albany, Oct. 19, industrial Bldg., Bldg. 2 alterations and addn. at State College for Teachers, from William E. Bouley Co., Inc., Auburn, **$535,593.** CD 10/10.

Pa., West Chester—HIGH SCHOOL—West Chester Boro School Dist., West Chester, Oct. 20, high school, from Wark & Co., 1700 Sansom St., Phila., **$757,770.** Baader, Young & Schultze, 1400 Walnut St., Phila., archts. CD 9/7.

Tenn., Memphis—PHYSICAL EDUCATION—State of Tennessee, Nashville, rejected bids Oct. 19, health and physical education bldg. at West Tennessee State College, L. B. **$449,600.** CD 10/26, under LB.

CONTRACTS AWARDED

●**Mass., Lowell**—HOUSING—City of Lowell Housing Auth., 562 Market St., veterans housing, Gorham St., to Davison Constr. Co., 1306A Elm St., Manchester, N. H., **$2,422,000.** Bids 10/5 awarded 10/24. CD 10/12, under LB.

Mass., Methuen — HOUSING — Town of Methuen Housing Auth., Town Hall, 60 unit veterans housing Project 200-1, to W. Satramski & Son, 27 Williams St., Salem, **$491,837.** Bids 9/14, awarded 9/15. CD 8/29.

Mass., South Peabody—HOUSING—City of Peabody Housing Auth., Peabody, 68 unit housing, Lynn St., to F. C. Dolan & Sons, 18 Aldworth St., Jamaica Plain, **$643,900.** Bids 10/19, awarded 10/24. CD 10/26, under LB.

Maintenance time and costs hit a new low when you do your pumping with Economy. Case histories on Economy's Sump Pumps, for example, show continuous trouble-free operation over thousands of hours service.

Screenless, these pumps are *really non-clogging!* Smooth, clear passages permit free passage of rags, solids or bulky material. Exclusive heavy-duty shock absorber prevents deflection of shaft by heavy objects entering impeller. All joints in drop pipe suspension are accurately machined and registered. Bronze, pressure grease-lubricated bearings.

Available in single or duplex units. Capacities from 50 to 10,000 G.P.M. Heads from 10 to 100 ft. For complete details, write Dept. CB-11 for Bulletin E-345.

Centrifugal, axial and mixed flow pumps for all applications.

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Division of Hamilton-Thomas Corp.
HAMILTON, OHIO

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For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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Get MORE Yardage . . . Even In Tight-Fit, Hard-To-Get-At Corners

Move an agile Osgood hoe right up to the job—and into it—with no lost motion. Its reputation is built on superior speed, mobility, power, and a high and far reach that allows the operator to pick up a load anywhere and to drop it accurately—wherever he wants it.

Yes, whatever the job, you can move more dirt, faster, with an Osgood—Shovel, Dragline, Crane, Clamshell, or Hoe. Gasoline, Diesel or Electric powered—⅜ to 2½ cu. yds. Write for descriptive literature and specifications.

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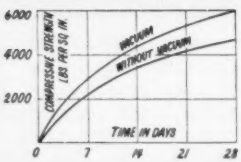
MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

VACUUM CONCRETE



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5 YRS. = 1⅓ STRENGTH
OF UNTREATED CONCRETE

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N. J., Montclair—SCHOOL—Bd. Educ., Montclair, Hillside School alterations, addns., to Frank W. Bogert, 324 Railroad Ave., Hackensack. **$932,868.** CD 10/3, under LB.

●**N. Y., Brooklyn**—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Zone 1, general contract P. S. 249, Caton Ave., Marlborough and Rugby Rds., to Laurence J. Rice, Inc., 30 Deepdown Rd., Forest Hills, **$1,129,000.** Bids 10/11. CD 10/17, under LB.

●**N. Y., Brooklyn**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical and lighting fixtures for P. S. 32, Hoyt St. between Union and President Sts., to Caristo Constr. Co., 26 Court St., Zone 2, **$1,170,000.** Bids 10/25. CD 10/6.

●**N. Y., Brooklyn**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Zone 1, P. S. 12, Adelphi and Willoughby Sts., to Psaty & Fuhrman, 369 Lexington Ave., New York, Zone 17, **$1,411,000.** Bids 10/26. CD 10/6.

●**N. Y., Rego Park**—SCHOOL—Supt. School Buildings, Design & Constr. 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract P. S. 175, 102 St. from 64 Rd. to 65 Ave., to T. G. K. Constr. Co. Inc., 55 W. 42 St., New York, Zone 18, **$1,146,200.** Bids 10/18. CD 10/20, under LB.

O., Warren—HIGH SCHOOL—Bd. Educ., Warren, general contract, Central Junior High School, to W. B. Gibson Co., Warren, **$646,150.** CD 10/26, under LB.

Ore., Portland—SCHOOL—**School Dist. 1,** 631 N. E. Clakamas St., Harvey W. Scott School, to Johnson-Sterner Corp., 3536 S. E. 76 St., **$448,161.** Bids 10/27. CD 9/29.

Tex., Freeport—HIGH SCHOOL—Brazosport Independent School Dist., Freeport, high school, to Tellepsen Constr. Co., 1710 Telephone Rd., Houston, **$916,000.** Bids 10/19. CD 10/26, under LB.

Tex., Houston—HIGH SCHOOL—Houston Independent School Dist., 1600 Washington St., Lamar High School, to LeBlanc, Inc., 2518 Huldy St., **$579,254.** Bids 10/21. CD 10/28, under LB.

Va., Lawrenceville — HIGH SCHOOL — Brunswick Co., Lawrenceville, Negro High School, to Mottley Constr. Co., Farmville, **$521,820.** Bids 10/18. CD 10/25, under LB.

Wis., Madison—SCHOOL—Bd. Vocational & Adult Educ., 211 N. Carroll St., general contract Vocational School alterations addns., to J. P. Cullen & Sons, Janesville, **$629,530.** Bids 10/14. CD 10/25, under LB.

Ont., Toronto — MUNICIPAL OFFICES — York Twp., H. A. Hall, clk., 40 Jarvis St., 2 story, part bsmnt., 40x235 ft., steel brick, stone, municipal offices, Eglinton Ave. W., to Milne & Nicholls Ltd., 57 Bloor St. W. Approx. **$424,977.** Bids 10/24. CD 10/11.

COMMERCIAL BUILDINGS

BIDS ASKED

Conn., New Haven—CHURCH—Church of the Redeemer, 575 Whitney Ave., 1 story, bsmnt., brick, stone church, Whitney Ave. and Cold Spring Rd., $250,000. Douglas Orr, 96 Grove St., archt. CD 7/1/46.

SOON LETS CONTRACT

Ala., Birmingham — APARTMENT—Marvin Warner & Joe Kanter, c/o Nembleton & Mims, archts., Title Guarantee Bldg., soon lets contract 10 story apartment. CD 10/24.

LOW BIDDERS

Calif., Lodi — HOSPITAL — Lodi Memorial Hospital Assn., 200 W. Pine St., rejected bids Dec. 21, 45,500 sq. ft., rein.-con. 66-bed hospital, LB. **$749,000.** CD 12/28/48, under LB.

Ga., Decatur — CHURCH — First Baptist Church, c/o low bidder, church, from Henry C. Beck Co., First National Bank Bldg., Atlanta, **$768,329.** CD 10/10.

Mo., Springfield—CHURCH—First Baptist Church, c/o pastor, South and Elm Sts., rejected bids Oct. 4, church, LB **$630,989.** CD 10/24, under LB.

CONTRACTS AWARDED

Conn., Manchester—HOSPITAL—Manchester Memorial Hospital, 71 Haynes St., 3 story, bsmnt., 44 bed brick, steel hospital addn., Haynes St., to Southern New England Constr. Co., Inc., 500 Blue Hills Ave., Hartford, **$622,000.** Bids 10/18. CD 10/25, under LB.

●**N. Y., New York**—OFFICE—Massachusetts Mutual Life Insurance Co., 1295 State St., Springfield, Mass., 26 story office, 5 Ave. and 48 St., on former site of St. Nicholas Collegiate Reformed Church, to Turner Constr. Co., 420 Lexington Ave., New York, **$7,000,000.** CD 4/27.

O., Bedford—HOUSES—Kohl Building Co., 4269 Brainard Rd., Chagrin Falls, fifty 1 story, no bsmnt., 24x28 ft., frame homes, separate contracts, **$400,000.**

●**O., Cincinnati**—HOUSING—Bob Byers, 683 E. Broad St., 200, 1½ story, bsmnt., frame homes, separate contracts. **$1,500,000.**

●**O., Cleveland**—STORE—Warren Village, Inc., Chester Bldg., and Jack and Robert Finkelstein, 271 Madison Ave., New York, N. Y., 16 unit store, bowling alley and parking area, Warren Rd. at Rose Lane, separate contracts, **$1,000,000.** Sidney H. Morris & Assoc., 134 La Salle St., Chicago, Ill., archts. and engrs.

O., Toledo—HOUSING—R. G. Dunbar, Inc., 4031 Lewis Ave., 350 homes in Ottawa Hills area. Owner builds. Approx. **$490,000.**

Pa., Phila. — CHURCH — Good Shepherd Roman Catholic Church, 67 St. and Chester Ave., church, to John Mc Shain, Inc., 17 and Spring Garden Sts. Approx. **$400,000.** CD 10/13.

Pa., Phila.—RESIDENCES—Lardner Homes, Inc., 1740 Georges Lane, residential development, Lardner St., to Fishman & Park, 1740 Georges Lane, **$680,000.** Christian H. Fries, 3701 N. Broad St., archt.

INDUSTRIAL BUILDINGS

November 15

Wis., Milwaukee—WAREHOUSE, etc.—The Texas Co., 300 Baker Bldg., Minneapolis, Minn., 1 story, 80x174 ft. warehouse, 1 story, 46x50 ft. repair shop, 1 story, 10x28 ft. and 28x10 ft. office and truck filling platform, 1 story, 20x30 ft. foam house, brick, steel, concrete fdns., $196,500. Charles G. Harris, c/o owner, engr.

November 18

Neb., West Point—GARAGE, etc.—Cuming County Public Power Dist., West Point, garage, service bldg. with offices in connection for rural power distr. assn., $100,000. James Loftus, Omaha Natl. Bank Bldg., Omaha, archt. CD 10/11.

SOON LETS CONTRACT

Calif., Concord—SALES, etc.—Fitzpatrick Chevrolet Co., 1950 East St., soon lets contract 12,000 sq. ft. auto sales bldg. and garage. Approx. $68,000. Leonard H. Ford, 1350 Main St., Walnut Creek, archt.

Colo., Grand Junction—PLANT, etc.—The Daily Sentinel, 634 Main St., soon lets contract 2 story, 50x135 ft., brick printing plant and office addns., $135,000. Smith Hegner & Moore, 132 S. 4 St., archts. and engrs. CD 5/29.

●**Tenn., Nashville** — SERVICE CENTER — Nashville Electric Service, 605 Church St., soon lets contract service center. $1,000,000. CD 12/11/44.

Ont., Toronto—PLANT—T. G. Ferguson, engr., 297 Victoria St., soon lets contract superstructure 113x230 ft., brick, concrete bottling and shipping plant, Dundas St. W. and St. Patrick St., for O. Keefes Brewing Co., Ltd., 397 Victoria St. Approx. $900,000.

CONTRACTS AWARDED

Wis., Milwaukee—WAREHOUSE—Standard Electric Supply Co., 1045 N. 5 St., Zone 3, 2 story, bsmnt., 63x148 ft., steel, brick warehouse store addn., concrete fdn. and floors, to Ray J. Moths Co., Inc., 3901 W. Rohr Ave., Zone 9. Approx. **$190,000.** Bids 10/17. CD 10/4.

UNCLASSIFIED

BIDS ASKED

November 15

Calif., San Francisco — PLAYGROUND — Recreation Comn. of City of San Francisco and San Francisco Co., 61 Grove St., imprv. Glen Park Playground and Center. Approx. $50,000. Plans deposit $10. CD 11/13/47.

November 16

Que., Marsoulins—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf extens. Approx. $200,000. Plans deposit $25. R. Blais, c/o owner, engr. CD 3/18.

November 17

†**Tenn., Nashville**—TRAINING CENTER EXTENSION—Bureau Yards & Docks, P.O. Box 365, Naval Base, Charleston, S. C., extens. at Naval Reserve Training Center, NOY 18530, Spec. 22335.

November 18

La., Lake Charles—BASEBALL STADIUM —City, baseball stadium, $75,000. Extended date Dunn & Quinn, Lake Charles, archts. CD 9/26.

SOON LETS CONTRACT

Kansas—RURAL DISTRIBUTION LINES—Pioneer Co-operative Assn., Ulysses, soon lets contract 272.96 mi. rural distr. lines in Grant, Kearny, Haskell, Gray, Morton and Stevens Counties. $125,000. Frank Horton & Co., Lamar, Mo., engrs. CD 10/6.

LOW BIDDERS

Illinois—RURAL DISTRIBUTION LINES—M. J. M. Electric Co-operative, Inc., W. H. Monke, pres., Carlinville, Oct. 25, approx. 111.45 mi. rural distr. lines, incl. 66 single phase and tie lines, approx. 46 mi. rehabilitation and conversion existing lines, Jersey, Macoupin and Montgomery Counties. Proj. Illinois 40 NPR, Macoupin, from Real Electric Corp., Owensboro, Ky., **$223,084.**

New York—PARK IMPRVS.—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave. New York, Zone 21, Oct. 26, preparation of site for placing sanitation fill, incl. construction hydraulic fill dike and hydraulic fill stockpile for Areas II, III and IV, etc. in Spring Creek Park, Queens Boro, Contr. No. B-165-149, from Atlantic Gulf & Pacific Co., 13 Park Row, New York, Zone 7, **$394,119.** CD 10/19.

N. Y., Bayside—PLAYGROUND—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, Oct. 26, playground adjacent to

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WISCONSIN HEAVY-DUTY *Air-Cooled* ENGINES...

"Keep 'em Rolling". . .

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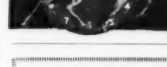
Because the Wisconsin Engine torque curve peaks at relatively low r.p.m. you have plenty of "give and take" power margin for the hard pulls without danger of stalling. And tapered roller bearings at BOTH ends of the drop-forged "he" crankshaft take up thrust loads, providing fullest protection against bearing failure. Extremely efficient flywheel-fan AIR-COOLING and weather-sealed rotary type high tension outside magneto, with impulse coupling, assure smooth running, easy starting and trouble-free service anywhere, any time, at any temperature from sub-zero to 140° F.

4-cycle single cylinder, 2- and 4-cylinder models, 2 to 30 hp. Specify "Wisconsin Power" for dependability.



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World's Largest Builders of Heavy-Duty Air-Cooled Engines
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Saxe System Welded Connection Units for welded assembly

Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

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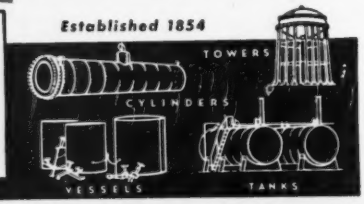

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P. S. 162, north of 56 Ave., from 201 to 202 Sts., Queens Boro, Contr. No. Q-293-149 from Moser Constr. Co., 24-16 Bridge Plaza Square, Long Island City, **$112,000.** CD 10/20.

N. Y., Napanoch—CELL BLOCK—Bureau Contracts & Accounts, Albany, Cell Block Bldg. 49 at Institute of Male Defective Delinquents from Walter A. Stanley Constr. Co., Inc., R. R. Ave., Ossining, **$850,000.** Harvey Wiley Corbett, 300 Fourth Ave., New York, archt.

N. Y., Napanoch—WALLS—Bureau Contracts & Accounts, Albany, Oct. 5, replacing south and east walls, etc. at Institute of Male Defective Delinquents, from Walter A. Stanley Constr. Co., R. R. Ave., Ossining, **$746,055.**

North Dakota — RURAL DISTRIBUTION LINES—McKenzie Electric Co-operative, Watford City, rejected bids Sept. 23, 12.5 mi. transmission lines, 10.5 mi. underbuilt lines, 332.1 mi. rural distr. lines, McKenzie Co. LB, **$389,709.** CD 10/5, under LB.

Pa., Phila. — UTILITIES TUNNEL — Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, Oct. 26, general contract for utilities tunnel, roads, walks, and electrical work in connection therewith for Bldgs. S-1, S-2 and Bldg. 7, at Phila. (Byberry) State Hospital, from Herbert J. Elkins, 7348 Malvern Ave., Zone 31, **$114,890.** CD 10/4.

CONTRACTS AWARDED

Calif., San Francisco—RECREATION BUILDINGS—Recreation Comn. of City and San Francisco Co., 61 Grove St., 4 rein.-con. recreation bldgs. incl. Potrero Hill, Ocean View, St. Mary's and Sunset Playgrounds, to Carrico & Gautier 365 Ocean Ave., **$842,000.** Bids 10/18, CD 10/25, under LB.

Illinois—RURAL DISTRIBUTION LINES—Illinois Rural Electric Co., S. R. Faris, mgr., Winchester, 386 mi. rural distr. lines and transmission lines in Calhoun and Pike Counties and vicinity, force account. Approx. **$500,000.** Stanley Eng. Co., Hershey Bldg., Muscatine, Ia., engrs. CD 7/8/48.

Ky., Bowling Green—DRIVE-IN THEATRE —Warren Enterprises, Inc., c/o L. B. Powell, vice pres.-treas., 1207 E. 10 St., 700-car drive-in motion picture theatre, U.S. 31-W by-pass hy., near Barren River, south of city waterworks, pumping station; separate contracts. Approx. **$100,000.**

●**Nebraska, Kansas, Iowa, Minnesota and South Dakota**—PIPELINE—Northern Natural Gas Co., Aquila Court, Omaha, Neb., expansion of pipeline sys. Owner builds. **$51,840,000.** M. C. Madsen, c/o owner, ch. engr. CD 3/13/47.

British Columbia—GAS WELL DRILLING —Royalite Oil Ltd., Calgary, Alta., natural gas well drilling, Graham Island in Queen Charlotte Islands, to Pacific Petroleum Ltd., Vancouver. Approx. **$150,000.**

PROPOSED PROJECTS

WATER SUPPLY

Ark., Pine Bluff—Pine Bluff Waterworks Co., Pine Bluff, imprv., exten. WW. **$341,000.**

Mich., Escanaba—City, surveys water filtration plant, **$600,000.** Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Zone 11, Ill., engrs. CD 10/26/44.

Miss., Brookhaven—City, City Hall, voted **$365,000** bonds WW. imprvs. CD 9/16.

Pa., Jeannette—Westmoreland Water Co., 230 S. Penna. Ave., Greensburg, WW sys. addn., imprvs., pipelines, pipeline repairs, reservoir adjustments. **$580,000.**

Tex., Bay City—City, voted bonds, 400,000 gal. steel elevated storage tank and tower, **$50,000;** watermain in Business Dist. **$325,000;** 2 deep water supply wells, **$60,000.** Garrett Eng. Co., Almeda Dr. Houston, consult. engrs. CD 9/30.

Tex., Katy—City, WW. **$125,000.** Hollis U. Rible, 500 Stuart St., Houston, consult. engr. CD 10/11.

Wash., Kennewick—City, City Hall, 2 m.g. concrete reservoir, supply lines, pump. units, transmission mains, elevated tank and pressure lines, etc. **$700,000.** N. W. Haner, Guardian Bldg., Portland, Ore., consult. engr.

SEWERS, WASTE DISPOSAL

Calif., Avenal—City, City Hall, voted **$160,000** bonds, sewer lines.

Idaho, Blackfoot—City, City Hall, sewer development, **$125,000.** F. W. Kiefer, city engr.

Ind., Warsaw—Bd. P. Wks., Warsaw, 2 story, bsmnt, 31x42 ft. rein.-con. sewage treatment plant, **$400,000.** D. H. Leenig, 110½ E. Center St., consult. engr. CD 8/31/43.

Miss., Brookhaven — City, City Hall, voted **$560,000** bonds sanitary sewer imprvs. CD 9/16.

†**N. M., Los Alamos**—U. S. Atomic Energy Comn., Los Alamos, sewage treatment plant, Inv. No. 291-50-19. **$200,000—$400,000.**

Pa., Coatesville—City, City Hall, 1 Ave., imprvs. exten. sewage disposal sys. **$100,000.** Albright & Friel, Inc., 121 S. Broad St., Phila., Pa., engr. G. E. Pollock, city engr.

Tex., Bay City—City, voted bonds, sewage treatment plant, **$175,000;** sanitary sewer line

extens., **$225,000.** Garrett Eng. Co., Almeda Dr., Houston, consult. engrs. CD 9/30.

Tex., Louise—Wharton Co. Water Dist. 1, Louise, 6- to 15-in. sanitary sewer lines. **$100,-000.** Henry J. Johnson, 5717 Kirby Dr., Wharton, consult. engr.

N. S., Glace Bay—Town, S. R. Wadden, clk., sewer, Approx. **$125,000.**

Que., Lachute Mills—Chatham Twp., J. B. Gamache, secy., St. Phillippe, installing various sewers and watermains, Approx. **$275,000.**

BRIDGES

†**Oklahoma and Texas**—U. S. Eng., P. O. Box 61, Tulsa, highway bridge across Lake Texhoma from Willis, Okla., to Whitesboro, Tex., **$650,000.**

●**Tex., Dallas** — Dallas Co., Lew Sterrett, judge, Courthouse, bond election Jan. 21, steel, concrete Forest Ave. Bridge and Bonnieview Rd. connections, **$1,722,000;** Mallory-Bridge road imprvs. **$431,000;** addnl. wooden and steel, concrete bridges, approaches, throughout county, **$1,343,250;** steel, concrete Wildwood Dr. Bridge, approaches, Elm Fork Creek, **$100,000;** steel, concrete Royal Lane Bridge, approaches, **$75,000;** California Rd. Bridge, approaches over Elm Fork, **$75,000;** concrete, steel Denton Rd. bridge, approaches over Elm Fork, **$75,000;** concrete, steel vehicle bridge on Industrial Blvd. **$50,000;** Simonds Rd. Bridge, approaches in Levee Dist. in southeast Dallas Co., **$50,000;** Beckley Ave. approach to Continental Viaduct, (Lamar-McKinney Bridge) **$100,000.** H. Klinger, c/o owner, engr. CD 9/13 and 9/15.

Quebec—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., bridge to connect towns of Riviere du Loup with Riviere de Loup Pointe, Approx. **$200,000.** O. Desjardins, c/o owner, engr.

STREETS AND ROADS

●**Tex., Dallas** — Dallas Co., Lew Sterrett, judge, Courthouse, bond election Jan. 21, 90 mi. asph. Belt Line Rd. encircling the county, **$3,392,000;** county road constr., grading, drainage, surf., various sects. of county, **$1,000,000;** West Dallas drainage and street imprvs., **$151,050;** imprv., asph. paving, N. Beckley Ave. **$75,000;** imprv. and paving, Sylvan-Maple Ave. **$918,000;** Brittian Rd. constr., Irving to Hy. 183, **$55,000;** imprv. Grauwyler Rd.-Elm Fork Rds. incl. concrete bridge, **$203,000;** Meyers Rd. imprvs., **$206,000;** paving, imprv. portions Jefferson Blvd. **$318,000;** Westmoreland Rd. imprvs. and connecting concrete Trinity River Bridges, **$132,000;** Bonnie View Rd. extens. to Lancaster City line, $75,000; road constr. and asph. paving Forest Ave. to Hy. 246, **$192,000;** asph. surf. 8 St. **$65,000;** Centerville-Ferguson Rd. imprvs. **$363,500;** Lancaster to Hutchins road imprv. **$260,000;** Military Dr. road imprvs. **$1,135,-250;** Lake June Rd. imprvs. **$340,000;** Estell-Euless road imprvs., **$100,000;** Riverview Rd. imprvs. **$425,000;** road imprvs. Denton Tap Rd., **$120,000;** road imprvs., Valley View Lane Rd. **$199,000;** road imprvs., Dowdy Ferry Rd., **$477,000;** Hampton-Inwood road imprvs. to Belt Line R. R., **$4,750,000;** road imprvs. for Old Greenville-Interurban-Skillman, Garland to Dallas, Mockingbird Lane to Garland, **$1,369,750;** drainage Industrial Blvd. **$85,000.** CD 9/13 and 9/15.

AIRPORTS AND AIRBASES

●**Pa., Pittsburgh** — HANGARS — Bd. Comrs., Allegheny Co., County Office Bldg., hangar, Greater Pittsburgh Airport, Moon Twp. **$1,500,000.** CD 12/15/45.

LATIN AMERICA

Trinidad, Port of Spain—Govt. of Trinidad, Port of Spain, plans agricultural experimental station. **$500,000.** Colonial Development Bd., London, England, engr.

PUBLIC BUILDINGS

●**Calif., Concord**—HIGH SCHOOL, etc.—Mt. Diablo Unified School Dist., Grant St., **$3,200,-000** bond election Dec. 6, high school, 100 addnl. elementary classrooms, throughout district, near here. John L. Reid, 109 Stevenson St., San Francisco, Reynolds & Chamberlain, 3833 Piedmont Ave., Oakland, and Anderson & Simmonds, 2800 Park Blvd., Oakland, archts.

Calif., Whittier—SCHOOL—City School Dist., Whittier, plans by Harold C. Wildman, 3701 Atlantic Blvd., Long Beach, masonry Daniel Phelan School. **$400,000.** CD 9/12.

Idaho, Idaho Falls—AUDITORIUM—City, City Hall, bond election about Nov. 15, civic auditorium. **$350,000.** CD 10/13.

Idaho, Pocatello—HIGH SCHOOL—School Dist. 1, 141 N. Johnson Ave., Junior High School, **$500,000.**

O., Cincinnati—FIRE HOUSES—City, City Hall, 9 and Plum Sts., plans completed by Charles Frederick Cellarius, 906 St. Paul Bldg., 111 E. 4 St., 2 story, bsmnt., brick firehouse, Central Ave. and Freeman, **$238,000;** plans completed by Bernard Pepinsky, 1701 Union Trust Bldg., 40 E. 4 St., 2 story bsmnt. brick fire house, Marburg Ave., **$238,000,** bond election in November for same. Wm. Ehlers, 1701 Union Trust Bldg., 40 E. 4 St., consult. engr;

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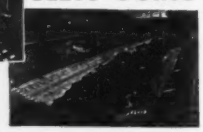

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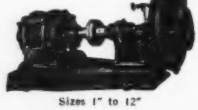

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plans by Feisburg & Gillespie, 805 Ingalls Bldg., 6 E. 4 St., 2 story, bsmnt., brick firehouse, dormitory, etc. 8 and Burns Sts., **$238,000.** H. M. Kranz, city engr.

O., Cleveland—HIGH SCHOOL—Bd. Educ., 518 Administration Bldg., 1380 E. 6 St., plans by Arthur Baer, Administration Bldg., 1380 E. 6 St., Lincoln High School, addns., alterations, 3001 Scranton Rd. **$400,000.**

O., Oxford—LIBRARY—State Dpt., P. Wks., S. O. Linzell, bldr., State Office Bldg., Columbus, concrete, brick, steel, library addn. **$450,000.** H. G. Allen, c/o owner, state archt.

O., Youngstown—JAIL, etc.—Mahoning Co., Courthouse, plans by Arsene Rousseau, Mahoning Bank Bldg., 10 story combination jail and office. **$600,000.** CD 9/23.

Pa., Jefferson — HIGH SCHOOL — Consolidated Bd. Educ. of Jefferson and Cumberland twps. and Jefferson Boro., Jefferson, plans by J. Carlton Winslow, Weamer Bldg., Indiana, 3 story, bsmnt., 280x300 ft., steel, rein.-con. Junior-Senior High School. **$750,000.** CD 1/13/47.

●**Pa., Pittsburgh**—PARKING GARAGE—Pub. Parking Auth., City County Bldg., plans by Hoffman & Crumpton, Century Bldg., 3 story open deck structure parking garage for 515 cars, Blvd. of Allies, Third Ave. and Market St. **$1,125,000.**

Tex., Austin—POLICE HEADQUARTERS—State, c/o Bd. Control, Austin, plans by Giesecke, Kuehne & Brooks, 121 E. 8 St., state police headquarters bldg. incl. garage and radio station. **$900,000.** CD 9/1.

●**Tex., Denison**—HOUSING—Denison Housing Auth., Joe Sullivan, chn., Denison, plans by Boese & Harkrider, 423 N. Main St., Fort Worth, 200 low rent dwelling units. **$1,500,000.** CD 8/24.

Tex., Edinburg—HOUSING—Edinburg Housing Auth., F. L. McDonald, mayor, Edinburg, 100 low rent housing units. **$875,000.**

Tex., Lamarque — SCHOOLS — Lamarque Independent School Dist., Lamarque, voted bonds, Oct. 22, brick, concrete school, slab fdn. **$400,000;** masonry, concrete, steel, school room addns. **$250,000.**

Tex., Nederland—HIGH SCHOOL—Nederland Independent School Dist., Nederland, $700,000 bond election Nov. 29, high school, **$712,500.** Maurice E. Walmer, Gilbert Bldg., Beaumont, archt.

Tex., Olney — HOUSING — Olney Housing Auth., Olney, 100 low rent housing units. **$875,000.** R. A. McGarry, 8665 Turtle Creek Blvd., Houston, consult. engr.

Tex., San Antonio—SCHOOLS—San Antonio Independent School Dist., Lavaca and Water Sts., plans by Phelps & De Wees & Simmons, 1501-6 Majestic Bldg., Junior High School and addnl. elementary school, **$450,000;** Junior High School, west of Fredericksburg Rd., **$300,000.** CD 10/8/48, under Los Angeles Heights Ind. School Dist., as owner.

Vt., Burlington—LABORATORY, etc.—State of Vermont, c/o State Purch Agt., State House, Montpelier, plans by Freeman-French-Freeman, 138 Church St., brick, masonry public health laboratory, **$350,000;** plans by A. T. Granger Assoc., Main St., Hanover, N. H., brick, masonry home economics bldg., at University of Vermont, **$500,000.**

●**Wis., Madison**—LABORATORY—University of Wisconsin, Madison, hygiene laboratory, **$1,125,000.**

B. C., Nanaimo—HIGH SCHOOL—Nanaimo School Bd., Nanaimo, plans by Thomas B. McArravy, Leighton Bldg., rein.-con. Senior High School. Approx. **$900,000.** CD 1/6/45.

Ont., Cornwall—HOME—United Counties of Stormont, Dundas and Glengarry, L. C. Kennedy, clk., plans by H. Roberts, Westport, 1 story home for aged on Beachville Farm, west of here. Approx. **$500,000.** CD 10/24.

COMMERCIAL BUILDINGS

●**Calif., Los Angeles** — HOTEL, etc.—Hotel Statler Corp., Pennsylvania Hotel, 7 Ave. and 33 St., New York, N. Y., plans by Holabird, Root & Burgee, 333 N. Michigan Ave., Chicago, Ill. 13 story hotel and office bldg., 900 to 948 Wilshire Blvd. **$10,000,000.** Steve B. Barnes, Robert S. Kadow, Mark F. Deering, 809 W. 3 St., Los Angeles, consult. engrs. CD 6/18/46.

Ill., Chicago—OFFICE—National Congress of Parents & Teachers, Mrs. John E. Hayes, pres., 600 S. Michigan St., plans by Harry M. Weese, 612 N. Michigan St., Zone 11, 2 and 3 story, steel, precast brick office, concrete floors, Huron and Rush Sts. **$400,000.**

Ky., Lexington—HOSPITAL—Good Samaritan Hospital, c/o John T. Gillig, archt., 180 Walnut St., hospital addn. **$400,000.**

La., Chalmette — HOUSING — Owner, c/o Ralph Gelpi, archt., 730 Gravier St., New Orleans, 160 houses. Approx. **$500,000.**

●**La., New Orleans**—HOTEL—Hilton Hotels Corp., 5 Ave. and 59 St., New York, N. Y., hotel. Approx. **$4,000,000.**

Md., Baltimore — APARTMENTS — Tenten Apartment Corp., Edward A. Meyerberg, 302 Park Ave., plans by Hal A. Miller & Assoc., 2118 Maryland Ave., 10 story, **bsmnt.**, brick, steel apartment, 1010 St. Paul St., incl. razing of present structure. A. E. Forrest, 518 Cathedral St., structural engr. Andre Merle Assoc., Southern Bldg., Wash., D. C., mechanical engrs. CD 11/13/47.

Md., Towson—HOUSING—Thos. J. Guidera & Son, Inc., 8601 Chestnut Oak Rd., plans

by Lawrence A. Menefee, 347 N. Charles St., Baltimore, 2 story hemnt., 120 unit masonry housing development, **$850,000**

●**Mass., Brookline**—HOSPITAL—New England Deaconess Hospital, Pilgrim Rd., plans by Coolidge-Shepley-Bulfinch-Abbott, 1 Court St., Boston, Central Hospital. Approx. **$3,000,000.** CD 3/22/48.

●**Mass., Westover Field**—HOUSING—Westover Field Development Co., H. L. Shields, pres., Portland, Me., plans by P. E. Atwood, 10 Court St., Bangor, Me, 750 unit housing **$7,000,000.** Prentiss & Carlisle Co., Inc., 107 Court St., Bangor, Me., engr.

●**N. Y., New York**—OFFICE—161 Williams St. Corp., Samuel Friedenberg, pres., c/o Sylvan Bien, archt., 565 Fifth Ave., 21 story office, William and Ann Sts. **$2,600,000.**

●**N. Y., New York**—OFFICE—Simon Bros., 292 Madison Ave., Zone 17, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, 22 story office, Madison Ave. and 51 St., **$6,000,000**

●**N. C., Charlotte**—HOSPITAL—Good Samaritan Hospital, E. C. Griffith, chn. Bd. Directors, 411 W. Hill St., plans by R. Edwin Wilson, 1809 Plaza St., 8 story hospital addn., addnl. 1 story wing, 2 story nurses home addn., Mint and Hills Sts. **$2,000,000.**

N. D., Minot—HOSPITAL—Trinity Hispital, Minot, hospital addn. **$500,000.**

●**Tex., Dallas**—HOTEL—Hilton Hotels Corp., 5 Ave. and 59 St., New York, N. Y., hotel. Approx. **$3,500,000.**

Tex., Fort Worth—SHOPPING CENTER, etc.—J. E. Foster & Son, 1101 Summit St., plans by Joseph H. Gaylord, Jr., 504 N. P. Anderson Bldg., 1 story, 14,000 sq. ft. masonry shopping center in Kieles Park addn. with paved parking area, **$210,000;** 1 and 2 story, 150x150 ft., brick, stone, structural steel, Westcliff Theatre with store bldg. attached, concrete fdn. and floors, **$250,000.**

●**Tex., Houston**—SHOPPING CENTER, Meadowbrook Housing Co., c/o C. A. McCoskey, 7801 Howard Dr., shopping center between Gulf Gulf Freeway and Winkler Dr. **$1,250,000.**

●**Tex., Houston** — APARTMENT—Carl C. Sharp & Assoc., 2422 Wordsworth St., Negro apartment rental proj. on 400 acre off LaPorte Rd. near Simms Bayou. **$1,000,000.**

●**Wash., Seattle**—HOSPITAL—Community Memorial Hospital Assn., c/o Dr. R. E. Nelson, 900 E. 63 St., Zone 5, plans by Marshall & Barr, Lloyd Bldg., Zone 1, hospital, E. 115 St. and Meridian Ave., **$2,750,000.** American Eng. Co., Central Bldg., Zone 4, consult. engr. CD 10/18.

Que., Lac au Saumon—HOSPITAL—The Serring Sisters of Notre Damon, Lac au Saumon, plans by P. Rinfret, 400 Blvd Charest, Quebec City, 4 story, 50x100 ft., rein.-con., brick hospital addn. **$500,000.**

INDUSTRIAL BUILDINGS

La., Mansfield—BOOSTER or PUMPING STATION—United Gas Pipe Line Co., 1525 Fairfield St., Shreveport, booster or pumping station. **$350,000.**

●**Pa., Erie**—STATION—Pennsylvania Electric Co., D. W. Jardine, pres., 21 W. 10 St., Front St. Station addn., incl. installation 2 turbo-generators and 2 high pressure boilers increasing present capacity from 62,000 to 126,000 kw. **$12,500,000.**

UNCLASSIFIED

Ark., Corning—NATURAL GAS SYSTEM—Fort Smith Gas Co., Fort Smith, natural gas sys., **$110,814.**

●**Colo., Denver** — PARKING STRUCTURES — City and Denver Co., Thomas P. Campbell, City and County Bldg., plans by Alfred J. Ryan, 1340 Glenarm Pl., two multi-story open-deck parking structures in downtown shopping area, **$2,600,000.** CD 9/27/48.

Del., Newcastle — HARNESS TRACK — Owner, c/o John W. Kane, North American Bldg., 927 Market St., Wilmington, harness track, grandstand, stables and parking for 14,000 cars, sulky storage, etc., Deemers Beach, near here, **$750,000.**

Neb., Beatrice — POWER and LIGHT EXTENS., etc.—City, Beatrice Utility Bd., Beatrice, power and light extens., imprvs., **$300,000.**

●**O., Toledo**—YARDS—New York Central System, E. A. Dougherty, ch. engr., La Salle St. Station, Chicago 5, Ill., imprv. Stanley Yards of railroad, 5 mi. southeast of here, incl. new track work, diesel fuel storage, fueling and sanding facilities and Diesel locomotive maintenance and repair shop, **$1,000,000.**

Tex., Dallas—DOCKS—St. Louis Southwestern Ry. Co., W. S. Hanley, ch. engr., Tyler, docks, Unit 1, heavy timber, concrete, steel type, for loading and unloading, **$150,000;** Unit 2, dock for patrons useage, **$200,000;** Unit 3, dock for patrons useage, **$175,000,** each on 2 acre tract in Trinity Industrial area.

●**Ont., Toronto** — TELEVISION STATION — Canadian Broadcasting Corp., 1425 W. Dorchester St., Montreal, television station. Approx. **$3,000,000.**

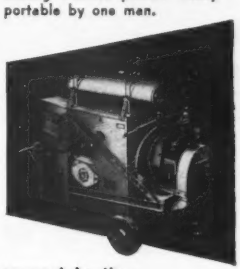
●**Que., Montreal** — TELEVISION STATION — Canadian Broadcasting Corp., 1425 W. Corchester St., television station. Approx. **$1,000,000.**

The New
HERMAN NELSON
De Luxe Model Portable Heater

- **GREATER VERSATILITY**
  Burns kerosene, gasoline, or a mixture of heavy fuel oils and gasoline.
- **NEW OPERATING ECONOMY**
  Set thermostat at desired temperature—automatic flame control does the rest.
- **NEW CONVENIENCE**
  Connection for external fuel supply enables continuous operation with minimum attention.
- **SAFE, CLEAN, QUICK HEAT**
  No soot, smoke or open flame. Abundant fresh heated air forced to areas where most needed.
- **250,000 BTU PER HOUR CAPACITY**
  Enough to heat three ordinary 5-room houses!
- **ELECTRIC MOTOR POWERED**
  115/230 volt, 60 cycle, single phase. Automatic constant spark ignition!
- **TWO EXTENDABLE HOT AIR DUCTS**
  Each 12" dia. x 12' long.

Also Available!

Popular Herman Nelson Gasoline-Burning Portable Heater (Completely Self - Contained Unit.) Self-powered for areas lacking electric power. Easily portable by one man.



Write for information about temporary or semi-permanent heating.

THE HERMAN NELSON CORPORATION MOLINE ILLINOIS

SINCE 1906 MANUFACTURERS OF QUALITY HEATING & VENTILATING PRODUCTS

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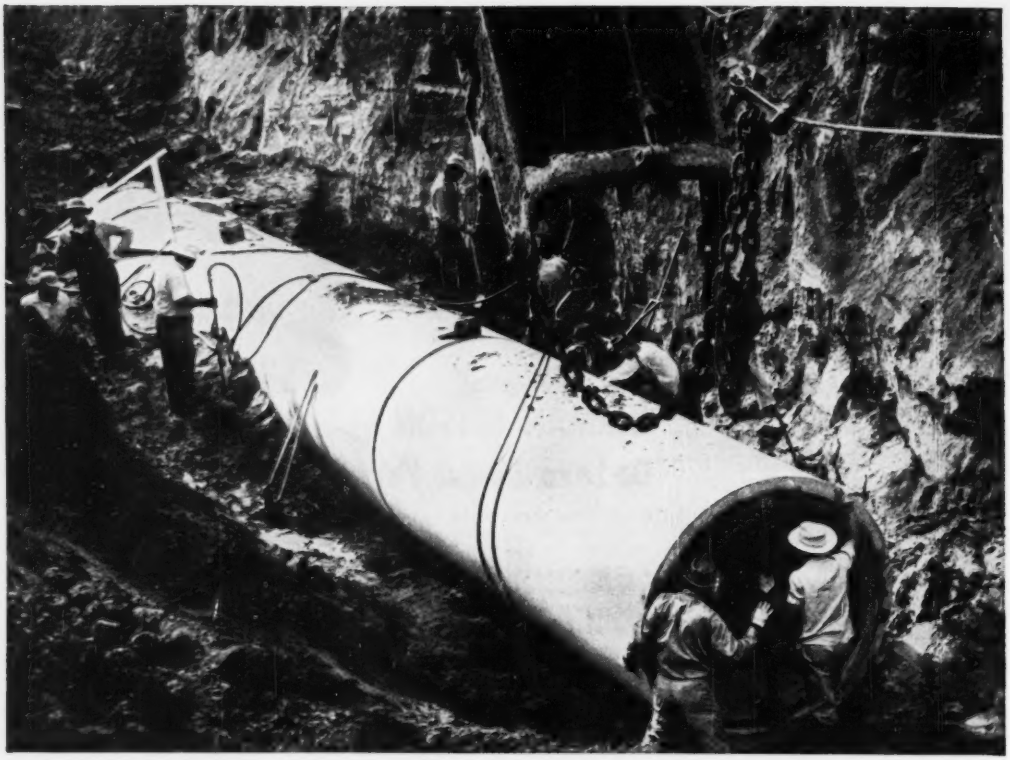
Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!

AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 - INDIANA - U.S.A.

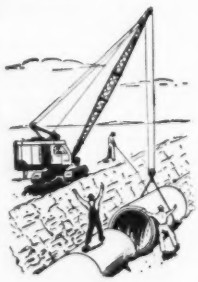
DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905



48½ Miles of *CONCRETE PIPE* in New Tulsa-Spavinaw Water Line

WHEN TULSA NEEDED expanded water line facilities to serve growing domestic and industrial needs it selected concrete pipe for the installation. This new line, extending northeast from Tulsa to Spavinaw Creek, uses 48½ miles of 72-in. and 66-in. concrete pipe. It is designed to deliver 40 mgd.

This new water line parallels a 25 mgd. concrete pipe line *that Tulsa built to Spavinaw Creek 25 years ago.* The satisfactory performance of that line was an important influencing factor in drawing up the specifications for this second line.



With both installations, Tulsa will benefit from water lines that will:

—serve without tuberculation and have far less incrustation to impair their hydraulic efficiency.

—prevent leakage because of their dense structure and joints that can be made watertight.

—stay clean, thus minimizing taste, odor and dirty water difficulties.

—have the durability to render long years of service.

—require little or no maintenance expense.

—provide true *low-annual-cost* service.

PORTLAND CEMENT ASSOCIATION

33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
December Materials and Labor Prices will appear in the December 8, 1949 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots incl. $1.00 per bbl. for bags, cash. dis. not deducted			SAND AND GRAVEL Per ton, carload lots Gravel,	Gravel,		CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.; per block	CONCRETE Ready Mixe. 1:2:4, over.
	Cloth	Paper	Bulk	1½ in.	¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand gray, Lt. wgt. agg.	50 c.y., del.
Atlanta	$4.11	$3.36	$3.05	$2.00	$2.00	$1.75	$2.10	$2.10	$1.65	$1.85	$0.1725	$0.1725	$11.00
Baltimore	....	3.39	3.14	2.40‡*a*	2.40‡*a*	1.95‡*a*	2.60‡*a*	2.70‡*a*	2.45‡*a*	2.45‡*a*	.16	.16*a*	10.25
Birmingham	3.75	3.00	....	2.06	2.06	1.84	2.50	2.50	1.00	1.20	.145	.145	7.75
Boston	4.47	3.67	3.41	2.50*a*	2.50*a*	2.50*a*	1.60*a*	1.70*a*	....	....	.196	.2 5*a*	10.45*h*
Chicago	3.63/3.69	2.82/2.89	2.58/2.64	2.75‡*b*	2.75‡*b*	3.20‡*b*	2.75‡*b*	2.75‡*b*	2.00‡	2.00‡	.20	.206	....
Cincinnati	4.14	3.56	3.08	1.85‡*e*	1.85‡*e*	1.75‡*e*	2.20‡*h*	2.20‡*h*	1.50	1.50	.19	.205	10.60*d*
Cleveland	3.83	3.03	2.73	1.90*def*	1.65*df*	1.55*d*	3.55‡*a*	3.55‡*a*	2.75	2.75	....	.21	11.80*g*
Dallas	3.57	2.82	2.52	2.00	2.15	1.75	2.10	2.15	....	....	.089*e*	.125	9.30
Denver	....	3.54	3.29	1.85	2.00	1.15	....	....	....	....	.20	.23*a*	9.65
Detroit	3.78	2.98	2.73	3.25‡*b*	2.95‡*b*	3.00‡*b*	3.00‡	3.00‡	3.00‡	3.00‡	.17	.18*a*	9.15*f*
Kansas City	3.91	3.16	2.85	1.95	1.95	1.30	1.45*d*	1.45*d*	....	....	.15*aq*	.20*eh*	10.40*b*
Los Angeles	....	3.72*a*	3.32*a*	1.94‡*a*	2.04‡*a*	1.74‡*a*	1.92‡*a*	1.92‡*a*	....	....	....	.075*f*	9 70*hh*
Minneapolis	4.13*ed*	3.3*3ed*	3.07*ed*	2.30‡*aq*	2.30‡*aq*	1.35‡*aq*	2.40‡*aq*	2.40‡*aq*	....	....	.21*i*	....	10.90*fi*
Montreal	....	2.46*ac*	2.31*ac*	.....	2.50*hi*	2.00*i*	1.35*ij*	1.60*ij*	....	....	.22	.16*a*	9.05*ek*
New Orleans	....	2.90*e*	2.65*e*	2.32	2.32	1.82	....	....	1.05	1.25	.23	....	12.40
New York	4.29	3.49	3.24	2.00*bk*	2.00*bk*	1.45*bk*	2.25*bl*	2.25*bl*	....	....	.18*h*	.18*ah*	10.50*a*
Philadelphia	3.93/4.23‡	3.13/3.43‡	2.87/3.17‡	2.45‡	2.55‡	2.05‡	1.90‡	1.95‡	1.50	1.50	18/.22	....	10.80
Pittsburgh	3.90	3.18	2.85	2.05‡	2.05‡	2.00‡	2.50‡	2.50‡	2.05	2.05	.22*d*	.22*d*	10.85
St. Louis	3.74/3.80*b*	2.94/3.05*b*	2.75*b*	2.60‡*am*	2.40‡*am*	2.00/2.40‡*am*	1.60*j*	1.60*j*	1.15	1.15	.215	.24*es*	10.40
San Francisco	....	3.39	2.99	1.84	1.84	1.94	1.94	....	....	....	....	.25*c*	10.75
Seattle	....	3.45*a*	2 95*a*	2.75‡*bm*	2.75‡*bm*	2.75‡*bm*	3.50‡*bm*	3.50‡*bm*	....	....	.22*j*	.3135	9.75*j*

‡ Delivered. * Prices incl. dealers comm. except as noted.
CEMENT: *a* Subj. to 10¢ dis. *b* Less 2% for cash. *c* CL price dealers' comm. not incl. *d* Dealers sell only LCL. *e* Plus switching charges.
SAND, GRAVEL, STONE & SLAG: *a* Truck lots. *b* Per cu. yd. *c* 5 tons or more. *d* F.o.b. plant. *e* ¼". *f* Pea gravel. *g* Less 5% for cash. *h* Less than 5 tons. *i* Sales tax incl. *j* F.o.b. quarry. *k* Barge lots asd. *l* F.o.b. scow Hudson River. *m* Less 2% for cash.
CONCRETE BLOCK: *a* Cinder. *b* Waylite. *c* Haydite. *d* Celocrete. *e* 5⅓ x 8 x 12 in. *f* 4 x 8 x -2 std. wgt. *g* F.o.b. truck at job. *h* F.o.b. plant. *i* Less 2% for cash. *j* Less 1% for cash.
READY MIXED CONCRETE: *a* 5 cu. yds. or over del. Man. *b* 25 cu. yds. or more. *c* 10–100 cu. brackets. *d* Truck loads up to 500 cu. yds. *e* 2,000 lb. coner. *f* 2500 lb. comp. *g* Aver. haul 7–9 mi. zone. *h* Less 50¢ for cash. *i* 5% off for cash. *j* 2% off for cash. *k* Sales tax included. *l* 1:2½:4.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10c, per bbl. for payment within 15 days of date of invoice. Subject discount 10c, per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$2.40†	Buffington, Ind	$2.20	Steelton, Minn	$2.40	Muskegon, Mich	$2.40†	Toledo, O	$2.40†
Clinchfield, Ga	2.40†	Independence, Kan	2.30	Leeds, Ala	2.25	Saginaw, Mich	2.35†	Milwaukee, Wis	2.40†
Kingsport, Tenn	2.40†	Hannibal, Mo	2.35	Duluth, Minn	2.40	Wyandotte, Mich	2.40†	Green Bay, Wis	2.40†
West Des Moines, Iowa	2.30†	Northampton, Pa	2.40	Hudson, N. Y	2.40	Buffalo, N. Y	2.40†	Ironton, O	2.30
Nazareth Pa	2.40†	Universal, Pa	2.40	Alpena, Mich	2.25†	Oswego, N. Y	2.50†	Montreal City	2.13
Bath, Pa	2.40†	Waco, Tex. (+ 9¢ tax)	2.20	Detroit, Mich	2.40†	Cleveland, O	2.40†	W. Winfield, Pa	2.40†

‡ *Prices to hold for fourth quarter of* 1949.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	PAVING ASPHALT Per ton, less than 80 penetration Tank car	Drums	ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration Tank car	Drums	CUTBACK ASPHALT Per ton Tank car	Drums	ROAD OIL Per gal. Tank car	ASPHALT EMULSION (Quick-breaking) Per gal. Tank car	Drums
Atlanta	$73.00	$35.00	$2.25	.....	....	.....	....	.....	.....	.....	.....	.....
Baltimore	150.00‡	57.70‡	.....	$22.00	.....	$.09	$0.145	$.09	$.165	$.09*i*	$.09	$0.11
Birmingham	.....	32.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.50*a*	$35.50*a*	.1036*a*	.185*a*	.115*aw*	.205*aw*	.10*a*	.113*a*	.205*a*
Chicago	155.00‡*a*	85.00/88.00‡*b*	2.70/3.50‡*f*	20.25*b*	30.25*b*	19.25*bw*	29.25*bw*	.0875*bw*	.16*w*	.075*b*	.1025/.1075*b*	.15/.1675*b*
Cincinnati	.....	.....	.....	20.50*k*	....	.0875	.0890	.0965*w*	.0965	.....	.....	.....
Cleveland	.....	49.00‡	3.43*g*	25.00	35.00	25.00*v*	34.50*v*	.11*w*	.22*w*	.10	.12	.25
Dallas	*e*	40.00	*e*	23.95	42.97	.1012	.1898	26.99	47.77	.0987	.1062	1423
Denver	.....	43.00	.....	.....	....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	.....	.....	29.05	....	.12*v*	.....	.1188*w*	.....	.....	.....	1925
Kansas City	.....	40.00*d*	.....	19.05*el*	....	.....	.....	.075*ew*	.0775*w*	.065*e*	.....	.....
Los Angeles	*e*	.....	*e*	12.50*dm*	....	12.50*dv*	.....	14.00*d*	.....	12.50*dv*	.0775*j*	.1575*j*
Minneapolis	.....	.....	2.83*h*	24.00	35.00	22.00*v*	33.00*v*	24.00	35.00	.085	.12	.22
Montreal	137.00	*e*	*e*	27.00*n*	36.65*n*	16.70*nu*	18.70*nu*	16.30*nu*	18.30*nu*	15.20*ns*	.174*n*	.215*ns*
New Orleans	.....	.....	.....	16.50*e*	....*o*	16.50*ev*	.....*o*	.08*ew*	.....*o*	.0775	.08	1425*t*
New York	.....	.....	2.35*f*	25.50	37.86*q*	24.50*v*	43.88*qv*	.1040*w*	.1867*qw*	.0990	.1040	.1847*q*
Philadelphia	150.00	110.00	4.06	23.00	....	22.00*v*	.....	.095*w*	.....	.....	.....	.....
Pittsburgh	165.00	42.00	4.50	22.00	36.00	.11	.23	27.00	37.00	.095	.10	.21
St. Louis	.....	.....	.....	21.65*f*	....	16.48	.....	.0925*w*	.....	.15	.1081	.25
San Francisco	.....	57.75*e*	.....	15.50*q*	31.00*qp*	15.50*qkv*	.....	17.50*q*	.....	.....	.09	.16
Seattle	.....	.....	.....	15.50*h*	36.00*h*	16.00*hv*	.....	17.50*h*	21.50*hr*	16.00*hv*	.08*h*	.09*h*

‡ Delivered.
PAVING BRICK & BLOCK: *a* CL. *b* 3½ x 4 x 8½. *c* 2½ x 8½ x 4. *d* F.o.b. Buffalo, Kans. *e* Not used. *f* 2" interior 6¢ treat. *g* 3". *h* 8¢ treat.
ASPHALTS: *a* Price at plant, Everett, Mass. *b* F.o.b. refinery, Lockport, Ill. *c* F.o.b. Sugar Creek, Mo. *d* F.o.b. refinery, El Segunda. *e* F.o.b. Baton Rouge. *f* F.o.b. Wood River or Roxana, Ill. *g* F.o.b. Richmond, Calif. *h* F.o.b. Martinez, Calif. *k* 50-300 penetr. incl. *o* Drums not avail. *r* In customer's drums. *u* Per 100 gal. *v* Per ton. *i* Bulk refinery. *j* F.o.b. refinery, Englewood, *l* Less than 100 penetr. *m* 40–80 penetr. *n* Tax *p* Shipped in steel bbl. *q* Use of used drums. *s* Shipped in drums, per drum. *t* 55-gal. drums. *w* Per gal.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES– PLATE	REINF. BARS[ab] billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standards	Light [cf]	Re-rolled	TRACK SUPPLIES Angle Bars	Std Spikes	Tie Plates[eg]	Track Bolts [d]
Birmingham Area	$3.25	$3.35	$6.75	....	$64.00	$71.00	Not	$4.25	$5.35	$4.05	.. ..
Chicago Area	3.25	3.35	6.75	$4.05	64.00	71.00	avail-	4.25	5.35	4.05	..
Pittsburgh Area	3.25	3.35	6.75	4.05	64.00	71.00	able	4.25	5.35	4.05	....
Buffalo Area	3.30	3.35	6.75	4.05	64.00	71.00	....	4.25	5.35	4.05	$8.50
Cleveland	....	....	6.75	....	.....	.....	....	....	....	....	8.50
Youngstown Area	....	3.35	....	....	.....	.....	....	....	5.35	....	....
Geneva	3.25	....	....	...	.....	.....	...	.. ..	....	....	....
Los Angeles	....	4.05	....	....	.....	.....	....	....	5.35	....	....
Pueblo	3.25	3.35	....	....	64.00	71.00	....	4.25	5.35	4.05	8.50

a Fabricated: To consumers: $4.25; except $5.00 Seattle, Wash. *b* Rail steel price $3.85; Williamsport, Pa. *c* Rail steel $102 per ton Williamsport, Pa. *d* Treated. Untreated $8.25. *e* Except $66.00 Minnequa, Colo. *f* Except $85.00 Minnequa, Colo. *g* Except $4.20 Pittsburg, Calif.; $4.50 Seattle, Wash.

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb base price	REINFORCING BARS Per 100 lb., base price [u] 5 tons to carload lot [b] New billet	Rail steel	Add $/ewt for switch	Del.	EXPANDED METAL LATH[k] Per 100 sq. yd., carload lots Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING[d] Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$4.75	$5.225[k]	$5.225[k]	$.025	$.10	$31.50	$31.50			
Baltimore	5.51	4.47[l]	....	....	.10	40.00	43.00			
Birmingham	5.08	5.08	5.50	.05	.15	43.00[p]	45.50[p]			
Boston	5.62[k]	5.46[k]	5.46[kz]	....	.10/.15	31.00	33.00			
Chicago	4.90-5.05	4.30[ff]	4.30[f]	.0625	....	31.00[‡]	33.00[‡]			
Cincinnati	5.44[‡r]	5.44[r]	....	....	....	31.00[zee]	33.00-[zee]			
Cleveland	5.00[kk]	4.37[v]	....	....	.10	34.50	36.50			
Dallas	6.25	5.00	5.00	....	....	43.50	46.00			
Denver	6.45	6.65[c]	....	....	....	47.00[s]	54.50[qs]			
Detroit	5.28	....	....	....	.10	30.00[x]	37.00[q]			
Kansas City	5.50	4.80[d]	....	....	....	37.00	39.00			
Los Angeles	5.45[f]	5.35[bb]	....	....	.15	37.00[f]	41.00[kk]			
Minneapolis	5.29	5.83[ll]	5.83[ll]	....	.15	34.50	36.50			
Montreal	5.25[t]	5.15[t]	5.15[t]	....	....	44.10[h]	46.80[h]			
New Orleans	....	5.00[ek]	....	.05	.10	32.00	32.00			
New York	5.13[v]	5.48	5.33	....	.15/.20	33.00[st]	35.00[st]			
Philadelphia	5.25	5.55	....	....	....	34.50[‡]	36.50[‡]			
Pittsburgh	4.30/4.40	4.30/4.40	4.30/4.40	.05	.10	32.50	34.50			
St. Louis	5.42[k]	4.77[e]	4.77[e]	....	....	42.00[aa]	48.00[aa]			
San Francisco	5.90[ii]	5.65	....	....	....	36.50	38.50			
Seattle	5.90[e]	5.25[ed]	....	....	....	52.00[mm]	42.00[mmz]			

A.P.M.* Joliet, Illinois, Donora, Penn., $2.36 F.o.b. Mill: Monessen, Penn., $2.36

A.P.M.* Joliet, Illinois, Donora, Penn., $1.63 F.o.b. Mill: Monessen, Penn., $1.64

A.P.M.* Joliet, Illinois, Donora, Penn., $2.47 F.o.b. Mill: Monessen, Penn., $2.48

*[k] Producing Mill

‡ Delivered. *a* Mill prices. *b* 1–5 tons, add 35c. Less than 1 ton, add 50c. *c* 20 tons or over base. *d* Mill price plus freight. *e* F.o.b. plant. *f* Includes delivery in free delivery zone. *h* List price. Dominion tax exempt. Provincial and Municipal tax extra. *i* Plus Dominion, Provincial and Municipal sales tax. *j* Price per ton. *k* F.o.b. city. *l* Intermediate and hard grade, new billet. *m* Per sq. yd. *o* 5 to 15 tons base. *p* Del. of 5000 sq. yd. or less. *q* Std. ribbed. 4 lb. per sq. yd. *r* 5 tons or over. *s* LCL. *t* Asphalt coated. *u* Note: Revised size extra—1 in., 1¼ in., 1½ in. 10¢, ¾ in., ⅞ in. 15¢, ⅝ in. 20¢, ½ in. 35¢, ⅜ in. 55¢, ¼ in. $1.30. *v* Under 20 tons. Straight. *w* Copper bearing. *x* 2.5 lb. per sq. yd. *y* $.0093 transportation tax included. *z* Copper alloy. *aa* Delivered truck to job. Contractor to do unloading. *bb* Includes 55¢ extra for ¾ in. size. *dd* F.o.b. dock. *ee* F.o.b. cars. *ff* Carload lots. *gg* Including sales tax. *kk* Delivered price is $5.00. *ll* Rolled at Geneva mill. Shapes rolled at Fontana, $6.90. *kk* ‖* ribbed. *ll* 5 to 8 tons. *mm* 2% off for cash.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in. *a*	VITRIFIED SEWER PIPE Per foot. Delivered ASTM C13–44T std. 8 in.	std. 12 in.	24 in.	36 in.	CLAY DRAIN TILE ASTM C4–24 Per 1,000 ft., carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered; ASTM C 14–41 12 in.	24 in.
Atlanta	$89.50	$0.43	$0.67	$3.39	97.00	$114.00	$140.00	$0.45	$2.00
Baltimore	93.88	51	918	3.95	10.00	220.00	341.00	.80	2.25
Birmingham	82.50	.40	.72	2.84	....	210.00[‡]	375.00[‡]	.90	2.50
Boston	97.46	.413[uvz]	.8235[uvy]	3.60[uvy]	10.00[uvy]	173.40	267.60	1.45[‡mq]	3.60[‡mq]
Chicago	96.49	.51	1.00	4.25	13.25	150.00[‡]	270.00[‡]	.70	2.35
Cincinnati	94.90	.440	.8505	3.40	10.55	220.00[‡]	340.00[‡]	.60	2.25[‡]
Cleveland	97.13	.336[z]	.648[z]	2.88[z]	8.405[z]	147.50	231.00	.65	2.50
Dallas	99.28	.365	.657	2.63	6.25	.....	.....	.49	1.60
Denver	104.36	.414[dd]	.714[dd]	2.98[dd]				.74[dd]	2.50[dd]
Detroit	92.13	.55	1.06	4.18	12.09	200.00[‡m]	310.00[‡m]	.65	2.50
Kansas City	98.41	.418[m]	.76[m]	3.00	....	215.00[m]	375.00[m]	.60[l]	2.00[l]
Los Angeles	111.06	.426	.927	4.532	11.298	193.00[‡]	324.60[‡]	.72	....
Minneapolis	100.67	.62[mo]	1.12[mo]	4.35[m]	.....	.....	.....	1.29[h]	3.67[h]
Montreal	100.00	.77[t]	1.35[t]	4.47[t]	8.50[ee]	.60[p]	.48[p]	72.00[‡kaa]	218.00[‡kkaa]
New Orleans	92.68	.448	.81	4.36	8.79*	231.00[bb]	405.00[bb]	.65	2.29
New York	92.80/97.50	.62	1.14	4.45	12.30	.....	.....	1.00	2.50
Philadelphia	90.47	.54	.99	4.08	10.28	235.00[‡]	300.00[‡]	1.25[h]	3.20[h]
Pittsburgh	97.76	.364[m]	.702[m]	2.70[m]	6.625[m]	134.20	197.40	1.05[h]	2.50[g]
St. Louis	94.27	.48	.92	3.80	9.00	.....	.....	1.10[il]	2.50[hl]
San Francisco	111.06	.50[d]	.99[d]	4.32[d]	10.80[d]	188.00[dl]	313.00[dl]	.69	2.85
Seattle	112.95	.51[b]	.91[b]	....	....	150.00[z]	.....	.80[ee]	2.40

‡ Delivered. † F.o.b. *a* B. & S. class B and heavier. CL, Burlington, N. J. (base) $87.50. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $5 per ton additional, 30 in. and larger, usually $1 per ton less. *b* Extra strength ASTM C 200–44T. *c* 4-in., $90. *d* SS361-A. 30 in. *e* Culvert pipe. Reinforced, AETM C76–41. *h* Reinforced. ASTM C75–41. *i* Reinforced. ASTM C76–37. *j* Centrispun. *k* Per 100 ft. *l* F.o.b. plant. *m* Truck delivery. *o* Listed price is based on LCL (no minimum). *p* Less than 5 ton loads, price per ft. *t* Within switching limits. *u* ASTM C13–40. *v* F.o.b. city. *z* 2 ft. lengths. *y* 3 ft. lengths. *z* CESA A 60–1941 specifications used. *aa* No standard specifications in Can. *bb* Freight allowed to destination in city. *ee* Truck loads: f.o.b. plant, New ton. *dd* LCL, delivered, f.o.b. truck. *ee* 1% off for cash. * Not stocked, only made to order.

	*WROUGHT STEEL PIPE (Full standard weight) Black	Galv.	
3½ to 6 in., Lap Weld†	%	30.0a	27.0
Butt Weld†	%	45.5a	42.5
2½ & 3 in., Butt Weld†	%	38.5	35.5
Lap Weld†	%	35.5	33.5
Black	%	35.5	34.5
Galv.	%	35.5	35.5
Black	%	50.5	49.5
Galv.	%	50.5	49.5
Mill		50.5	49.5
Lorain, Ohio		50.5	49.5
Aliquippa, Pa		50.5	49.5
Sparrows Pt., Md		48.5	47.5
Benwood, W. Va		50.5	49.5
Youngstown, O		50.5	49.5
Indiana Harbor, Ind		50.5	49.5
Sharon, Pa		50.5	49.5
Wheatland, Pa		50.5	49.5
Fontana, Calif		39.5b	24.5b

	30 in.	18 in.
12 in.	29.0	27.0
24 in.	29.0	27.0
12 in.	44.5	42.5
24 in.	44.5	42.5
12 in.	35.5	34.5
24 in.	35.5	34.5
12 in.	35.5	35.5
24 in.	35.5	35.5
12 in.	35.5	35.5
24 in.	24.5b	24.5b

a 3½ to 4 in. *b* Continuous

† Threaded and coupled. ‡ Plain end welded.

* WROUGHT STEEL PIPE: Discounts from standard list consumers carload prices. Base price approx. $200 per net ton. List prices per ft.: *Butt Weld:* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢.; 3 in., 76½¢. *Lap weld:* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE: List prices per ft. same as wrought steel pipe. Discount for Pittsburgh base. *Butt weld* — 1 in. and 1¼ in. black, +4.5, galv. +27.0; 1¼ in. black, 1.5, galv. +23.5; 2 in. black 2, galv. +23.0. *Lap weld* — 2½ in. to 3½ in. black + 5, galv. +26.5; 4½ in. to 8 in. black + 2, galv. +22.0. Freight rates to destination to be added to name delivered price.

(Continued on page 109)

(Slide rule, calculus, counting on your fingers)...

Bethlehem Wire Rope Means Low Cost per Unit of Work

Actually, it's as simple as 2 + 2 = 4. All you do is divide the purchase price of the rope by the total units of work it does in its life. The answer, of course, is cost per unit of work—the only *real* measure of wire rope economy.

What is a unit of work? It can be a ton of rock moved by a power shovel. Or a car of coal hauled up a slope. Or a ton-mile in oil-country rotary drilling. These are but three examples; there are many others. It isn't difficult to record, or closely estimate, the amount of work that a wire rope accounts for. That total will be high—and the unit cost *low*—when your choice is a Bethlehem rope.

It isn't first cost that determines whether a wire rope is expensive or economical. The rope labeled "Bargain" is frequently quite the reverse. You've found a bargain only when the rope cost is low with respect to the useful work accomplished.

On this basis—the only true yardstick—Bethlehem rope is a genuine "buy." Every foot, every inch of it, is built for service. . . built to give you *low* cost per unit of work. You can order it with confidence.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

DIGGING "IN THE DRY" CORALVILLE DAM, IOWA RIVER, IOWA

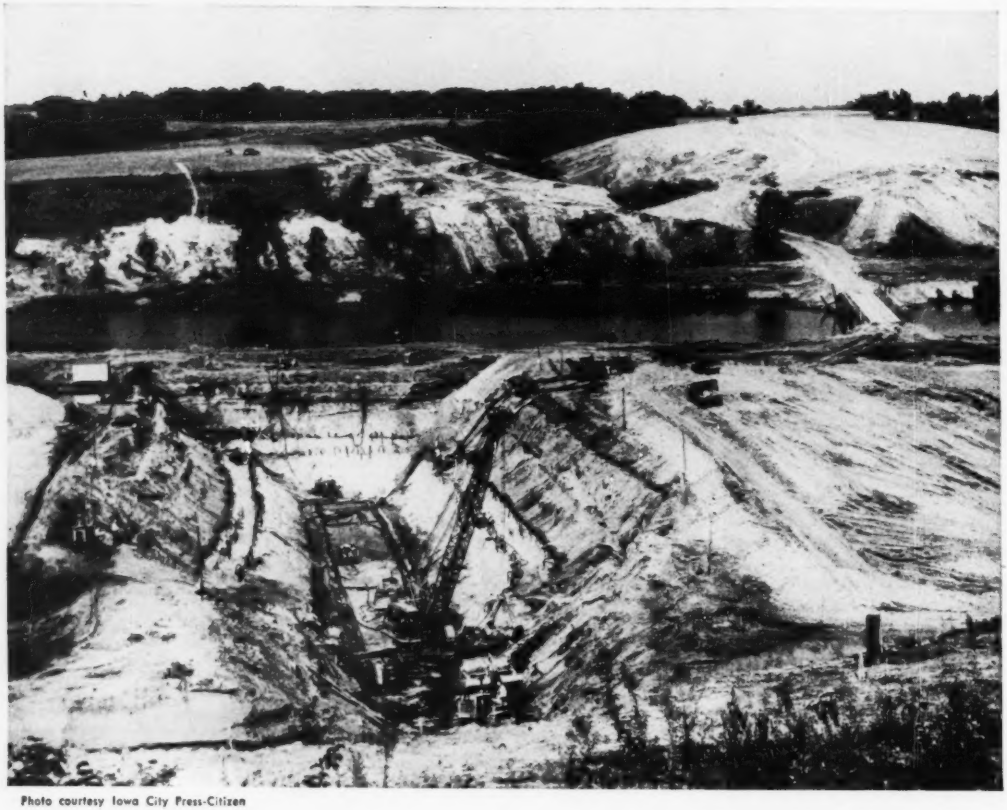


Photo courtesy Iowa City Press-Citizen

MORETRENCH IS THE LOW-COST WAY TO SOLVE A PUMPING PROBLEM

MORETRENCH WELLPOINTS, installed to rock, controlled 41 feet of water on this excavation for the cut-off wall for Coralville Dam. Material — sand, loam, clay and gravel. Rock at subgrade.

E. M. Duesenberg, Inc., Clear Lake, Iowa, contractor, made rapid progress—free of excessive pumping costs.

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 313 W. 25th St. Houston 8, Texas | Rockaway New Jersey

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F. O. B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box.
(Prices in Bold Face)
All Fir boards, dimension, planks No. 2, Fir small timbers and timbers is No. 1. Lengths up to 20 ft.
(Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh
Atlanta†‡	**$70.00**	**$71.00**	**$60.00**	**$62.00**	**$65.00**	**$68.00**	**$70.00**	.....	.....
Baltimore	**63.00**	**68.00**	**60.00**	**60.00**	**60.00**	**65.00**	**80.00**	.....	.....
	76.00	*76.00*	*76.00*	*76.00*	*76.00*	*76.00*	*84.50*	*72.00*	*72.00*
Birmingham	**73.00**	**76.00**	**63.00**	**65.00**	**68.00**	**75.00**	**85.00**	.....	.....
	65.00	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*81.00*	*81.00*	*81.00*
Boston	86.00	86.91	91.00	91.00	91.00	96.00	.....	.....	.....
	91/93	*91/93*	*93/95*	*81/88*	*81/88*	*101/103*	*101/103*	*101/103*	*101/103*
Chicago‡	**80/83**	**82/84**	**72/74**	**81/83**	**84/85**	**85/87**	**90.00**	.....	.....
‡	*81/83*	*85/86*	*83/84*	*83/84*	*85/86*	*85/87*	*87.00*	*91/92*	*91/92*
Cincinnati	**82.50**	**83.00**	**83.00**	**83.00**	**83.00**	**98.00**	**123.00**	.....	.....
	110.00	*115.00*	*95.00*	*105.00*	*110.00*	*115.00*	*123.00*	*125.00*	*125.00*
Cleveland	**80.00**	**82.00**	**66.00**	**76.00**	**78.00**	**80.00**	*85.00*	*85.00*	*85.00*
Dallas†‡	**54.00**	**60.00**	**60.00**	**53.00**	**56.00**	**57.00**	**90.00**	.....	.....
Denver	*Not in stock*		*86.00*	*85.00*	*85.00*	*85.00*	*104.00*	*114.00*	*119.00*
Detroit	**80.00**	**82.00**	**68.50**	**79.00**	**81.00**	**80.00**	.....	.....	.....
	82.00	*82.50*	*82.00*	*82.00*	*81.00*	*80.00*	.....	.....	.....
Kansas City	**100.00**	**100.00**	**90.00**	**95.00**	**95.00**	**100.00**	**110.00**	.....	.....
‡	*85.00*	*85.00*	*90.00*	*95.00*	*90.00*	*90.00*	*100.00*	*125.00*	*125.00*
Los Angeles*‡	*71.00*	*71.00*	*71.00*	*71.00*	*71.00*	*71.00*	*85.00*	*95.00*	*85.00*
Minneapolis‡	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*120.00*	*120.00*	*120.00*
Montreal ab	70.00	74.00	70.00	72.00	75.00	83.00	.....	.....	.....
	140.00	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	.....	*135.00*	.....
New Orleans†‡	**66.00**	**70.00**	**70.00**	**75.00**	**75.00**	**70.00**	*85.00*	.....	.....
†	*68.70*	*68.70*	*71.00*	*76.00*	*78.50*	*72.50*	**67.00**	*67.00*	*100.00*
New York‡	**90 97.50**	**92 50/100**	**Range from $80.00 to $90.00**				**95/100**	.....	.....
‡	.....	.....	*Range from $90.00 to $97.50*				*98/105*	*102.50/115*	*102.50/115*
Philadelphia			**Range from $88.00 to $97.00**				**88/97**	.....	.....
			Range from $105.00 to $115.00				105/115	*105/115*	*105/115*
Pittsburgh†‡	**75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**75/80**	**100.00**	.....	.....
†	*90/100*	*90/100*	*90/100*	*100/110*	*100/110*	*100/110*	*120/130*	*120.00*	*120.00*
St. Louis‡c	**89.50**	**91.50**	**82.50d**	**87.75d**	**94.25e**	**92.00e**	.....	.....	.....
‡c	.....	.....	*98.50e*	*98.50e*	*98.50e*	*98.50e*	*110.00*	*127.00*	*127.00g*
San Francisco†‡	*68.00*	*68.00*	*68.00*	*66.00*	*66.00*	*65.00*	*65.00*	*65.00*	*65.00*
Seattle†‡	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*	*62.50g*

	LONG LEAF Y. P. Merchantable grade up to 20 ft.		PLYWOOD Rail freight increment* (See note for base *price*)	
	2x12 Rgh	12x12 Rgh	¼"	¾"
Atlanta†‡	.....	.....	**$22.32**	**$27.24**
Baltimore	120.00	120.00	22.86	27.90
	.....	.....	.....	.....
Birmingham	115.00	125.00	21.78	26.58
	.....	.....	.....	.....
Boston	114.00	114.00	22.86	27.90
	.....	.....	.....	.....
Chicago‡	114/116	114/116	18.72	23.80
‡	.....	.....	.....	.....
Cincinnati	118.00	128.00	21.78	26.58
	.....	.....	.....	.....
Cleveland	.....	.....	22.20	27.12
Dallas†‡	83.00	90.00	18.72	22.80
Denver	...	.....	13.92	16.98
Detroit	.....	.....	21.78	26.58
	.....	.....	.....	.....
Kansas City	.....	.....	16.56	20.16
‡	....	.....	.....	.....
Los Angeles*	.....	.....	13.38ab	16.26ab
Minneapolis‡	.....	.....	16.56	20.16
Montreal ab	.....	.....	.....	.....
	.....	.....	.....	.....
New Orleans†‡	100.00	105.00	18.72	22.80
†	.....	.....	.....	.....
New York‡	175/200f	175/200f	22.86	27.90
‡	.....	.....	.....	.....
Philadelphia	180.00	180.00	22.56	27.90
	.....	.....	.....	.....
Pittsburgh†‡	....	.....	22.56	27.48
†	.....	.....	.....	.....
St. Louis‡c	.....	.....	18.72	22.80
‡c	....	.....	.....	.....
San Francisco†‡	.....	.....	10.08a	12.30a
Seattle†‡	.....	.....	.....	.....

† F.o.b. mill. ‡ Delivered. ‡ Retail-LCL. * Yard prices.
LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce *b* Tax exempt. *c* 5M lots. *d* 8-12 ft. lengths. *e* 8-16 ft. lengths. *f* 18 ft. or under. *g* No. 1 common.
PLYWOOD: Special concrete form grade Fir Plywood, 4' by 8' panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ¼", $139.00; on ¾", $164.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. *a* Lower rate by water shipment. *b* 50,000 lb. minimum.
* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Jan. 16, 1940a Single or Double Thickness A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	76%	76%	$0.2025	
Baltimore	66-10%	67-10%	.2025	
Birmingham	67%	67%	.1575	
Boston	60%i	60%i	.2025	
Chicago	67%	67%	.2025	
Cincinnati	66-10%e	66-10%e	.2025	Price of 60% Ammonia Gelatin is $0.0125 per lb. higher than 40%
Cleveland	66-10-10-10%	66-10-10-10%	.2425	
Dallas	65%	65%	.215	
Denver	67%	67%	.2075	
Detroit	66-10-10%	66-10-10%	.2025	
Kansas City	65%e	65%e	.2075	
Los Angeles	58%	63%f	.21	
Minneapolis	64%	64%	.2075	
Montreal	40-5%bc	40-10-5%bc	18.90h	
New Orleans	68%	68%	.2125	
New York	71%	72%	.32g	
Philadelphia	60%	70%	.2025	
Pittsburgh	70%	70%	.175	
St. Louis	70-10%	70-10%	.2075	
San Francisco	66%	73%	.2075	
Seattle	54%	55%	.21	

Glass: a Jobbers' list price per box, 14 x 20, as, $20.75 for A quality, $18.00 for B quality; 14 x 20, ds, $30.75 for A quality, $26.00 for B quality. *b* Discount from list, Sept. 1939; sales tax included, but 6% tax exemption not allowable for. *c* Single thickness. *e* Discount from list of Aug. 15, 1938. *f* as; ds—62%. *i* Double thickness 65%.

Explosives: * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g* In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $9.00 per trip. *h* F.o.b. city per 100 lb. forcite, 40%. Forcite 60%, $20.65.

40% Ammonia Gelatin price ranges in other than urban areas, per lb.
(except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.155	$0.1825	$0.2025
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.16 – .1675	.1875– .20	.2075– .22
Rocky Mtn. States	.16 – .1725	.1875– .20	.2075– .225
Pacific N. W. States	.1575– .17	.19 – .2025	.21 – .2225
Pacific S. W. States	.155 – .1625	.1875– .195	.2075– .2175

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.43	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.46	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.50	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	.79
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	.80
14-in.— 2-ft. from butt	6-in.	50 to 69-ft.	.80	.87
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.54	.81
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.67	.82
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	...	.83
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	.87

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots:		6"x8"x8' Untr.	6"x8"x8' Tr.	7"x9"x8'6" Untr.	7"x9"x8'6" Tr.
Boston	Oak	.....	.....	.....	.....
	Pine‡	.....	.....	.....	.....
New York	S. L. Sap Pine	$1.65	$2.85	$2.00	$3.30
	Mixed Oak	1.80	3.05	2.50	3.60
Birmingham	Hardwood	1.00	1.60a	....	2.25a
Chicago	Red Oak	....	2.50/2.60a	....	3.52/3.45a
Los Angeles	Douglas Fir	....	3.00a	....	....
	Redwood	1.86	....	....	....
Philadelphia	Red Oak	2.33	3.18a	3.10	4.25a
St. Louis	White Oak	2.70	....	3.45	....
	Red Oak	2.60	3.30a	3.35	4.10a
	Sap Pine or Cypress	3.20a	....	4.00	....
San Francisco	Douglas Fir	1.28e	2.24/	1.70h/	3.05a/
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. *a* Creosoted. *b* 7' x 9" x 8'. *e* Empty cell. *e* Green. *f* F.o.b. cars. *h* No constant price available. ‡ Not available

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.07-.12
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	22.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	1.80
Soda ash, 58%, in paper bags, per 100 lb. dense	1.35
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.50
Sulphate of copper, in bags, 99% per 100 lb f.o.b. works	7.00

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK— Per M. in quantity Common backing	Straight hard	LIME— Per ton, In paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	....	....	....	....	.....	.....	$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$325.00	$380.00	.....	.....	32.00*k*	35.00*k*	26.00	20.00	.....
Birmingham	97.50	104.00	195.00	231.00	.....	.....	20.00*ff*	22.50*gg*	24.74	16.30	.....
Boston	140.00†	149.00†	280.00†	317.00†	.....	.....	32.00*s*	35.00*s*	30.30†	26.40†	.....
Chicago	115.00	122.50	230.00	.....	.....	.....	21.00	23.00	28.50	23.00	.....
Cincinnati	168.00*j*	178.00*j*	238.00*jdd*	328.00*jf*	.....	.....	32.50*j*	38.00*j*	22.25*j*	20.50*j*	.....
Cleveland	118.00*ee*	126.00*ee*	236.00*ee*	.....	.....	.....	28.50	28.50	24.00	22.00	27.50*ss*
Dallas	.....	110.00	.....	.....	.....	.....	18.75	33.25	28.00	22.00	.....
Denver	.....	.....	.....	.....	.....	.....	32.00	32.00	34.80*bb*	28.00*bb*	34.00*bb*
Detroit	117.08	124.88	234.15	234.15	$290.68	$332.20	30.00*cc*	31.50*cc*	30.00	28.00	.....
Kansas City	115.00	125.00	.....	.....	.....	.....	22.00*o*	25.00*o*	36.00*p*	30.00*p*	30.00*p*
Los Angeles	*r*	*r*	*r*	*r*	*r*	*r*	20.00*§*	.....	.....	36.00	32.00
Minneapolis	88.00*p*	176.00*p*	330.00*p*	176.00*upp*	.....	.....	30.00*rp*	34.00	35.00*bbe*	26.00*bbe*	35.00*bbde*
Montreal	115.00*aa*	125.00*aq*	225.00*aq*	.....	.....	.....	25.50	35.50	23.50*t*	.....	.....
New Orleans	160.00	160.00	300.00	.....	.....	.....	29.00	.....	38.00	26.00	37.50
New York	118.20*h*	126.00*h*	173.30*ch*	189.00*hn*	.....	.....	33.00	.....	34.40	26.80	.....
Philadelphia	126.30	134.80	252.60	302.74	361.35	455.74	27.00	30.00	31.00	19.50	24.50
Pittsburgh	98.00	105.80	181.85	207.30	265.35	303.60	26.00	38.00*y*	20.45	16.85	2.97*ss*
St. Louis	120.00	138.50	252.50	252.50	339.50	.....	32.50*al*	30.50*al*	.80*aaap*	.80*aaap*	1.00*aaspss*
San Francisco	132.00*a*	148.50*a*	198.00*ddz*	148.50*za*	.....		32.00	.....	24.95	24.95	2.49*ss*
Seattle	150.00*ee*	160.00*ee*		160.00*eew*	....		32.00*s*	39.00*s*	32.00*ahh*	32.00*ahh*	3.60*ahh*

† F.o.b. *a* Smooth *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverized hot. *e* 5%, 10th following month. *f* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *i* F.o.b. warehouse only Truck load or over *k* $1.00 discount. *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed tile. *o* F.o.b. Buffalo. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. plant

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl Dry *a*	WHITE LEAD Per 100 lb. in 100 lb cases In oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES Carload lots f.o.b. factory Roll. mate surfaced, 85-90 lb per sq	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 360 lb. bbl. per ton
Atlanta	$17.00	$27.725	$1.75	$2.70	$1.65	$2.06‡	$2.06‡	$2.06‡	$1.00‡	$36.00‡
Baltimore	16.75	27.35	2.10	4.27	2.80	2.96	3.94	3.94	.55	36.00
Birmingham	17.00	27.725	3.90	3.40	..	2.80	2.75	2.75	.48	40.50*ss*
Boston	16.75	27.35	....	....	..	2.68	....	2.67‡*q*	.36	34.00
Chicago	16.75	27.35	....	....	....	2.34‡*u*	2.54‡*o*	2.54‡*o*	34.00‡*bbe*	37.00‡
Cincinnati	16.75	27.35	....	3.03	..	2.31‡	2.41‡*o*	2.41‡*o*	.35*y*‡	42.00‡
Cleveland	16.75	27.35	2.50	2.75*s*	2.35	2.32	2.41*o*	2.41*o*	.30*y*	35.00
Dallas	17.00	28.10	....	4.05	....	3.50*q*	3.75*q*	4.35*q*	.36	46.00
Denver	17.25	27.85	2.63	4.38	2.48	3.20*o*	2.20*o*	2.20*o*	.41*ff*	40.00
Detroit	16.75	27.35	2.50/2.60	3.35	2.50/2.60	2.32	2.41	2.41	....	35.00
Kansas City	16.75	27.475	....	....	....	1.65*e*	....	2.50	.315*y*	.....
Los Angeles	16.75	27.60	2.80	3.75	3.50	2.41	1.91*e*	*l*	45	*l*
Minneapolis	16.75	27.475	....	....	....	2.20*dd*	2.29*hdd*	2.29*hdd*	.336*idd*	34.00*rdd*
Montreal	.....	22.00	3.75*t*	4.20*t*	3.62*t*	3.25*t*	3.00*tf*	3.00*tf*	.85*t*	2.60*ks*
New York	16.75	27.35	3.45*y*	....	3.45*y*	2.32	2.41*o*	2.41*o*	.34*s*	35.00
Philadelphia	16.75	27.35	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	16.75	27.35	2.00	2.00	1.90	2.90	2.90*o*	2.90*o*	.37	38.00
St. Louis	16.75	27.35	..	....	....	2.20	2.42*h*	2.42*h*	.45	35.00
San Francisco	16.75	27.60	1.80	2.75*n*	1.35	2.27	3.30*aa*	....	.38*y*	.....
Seattle	16.75	27.85	2.67*m*	2.67*m*	....	3.23*mgee*	3.24*hmee*	....	.41*mee*	48.25*me*

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes *b* U. S. War Dept. Spec 3-49A *c* ASTM Spec D266-31 *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 *q* ft. *g* Per oil, 65 lb. *h* Net carload lot prices; Minneapolis and vicinity. *i* Asphalt pitch. *k* Per cwt. *l* Not used. *m* 1% discount or cash. *n* May, 1941 price. *o* Per 60-lb. *q* Per 90-lb. roll. *r* F.o.b. factory Chicago. *s* ASTM Spec. D266-41‡ *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint. contractors *x* $1.25 less. *z* Mineral surfaced. *y* 55-gallon container. *z* Drums *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement. Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt, in 100 lb. package. *ff* 5-gal. drums.

SKILLED AND COMMON WAGE RATES—PER HOUR

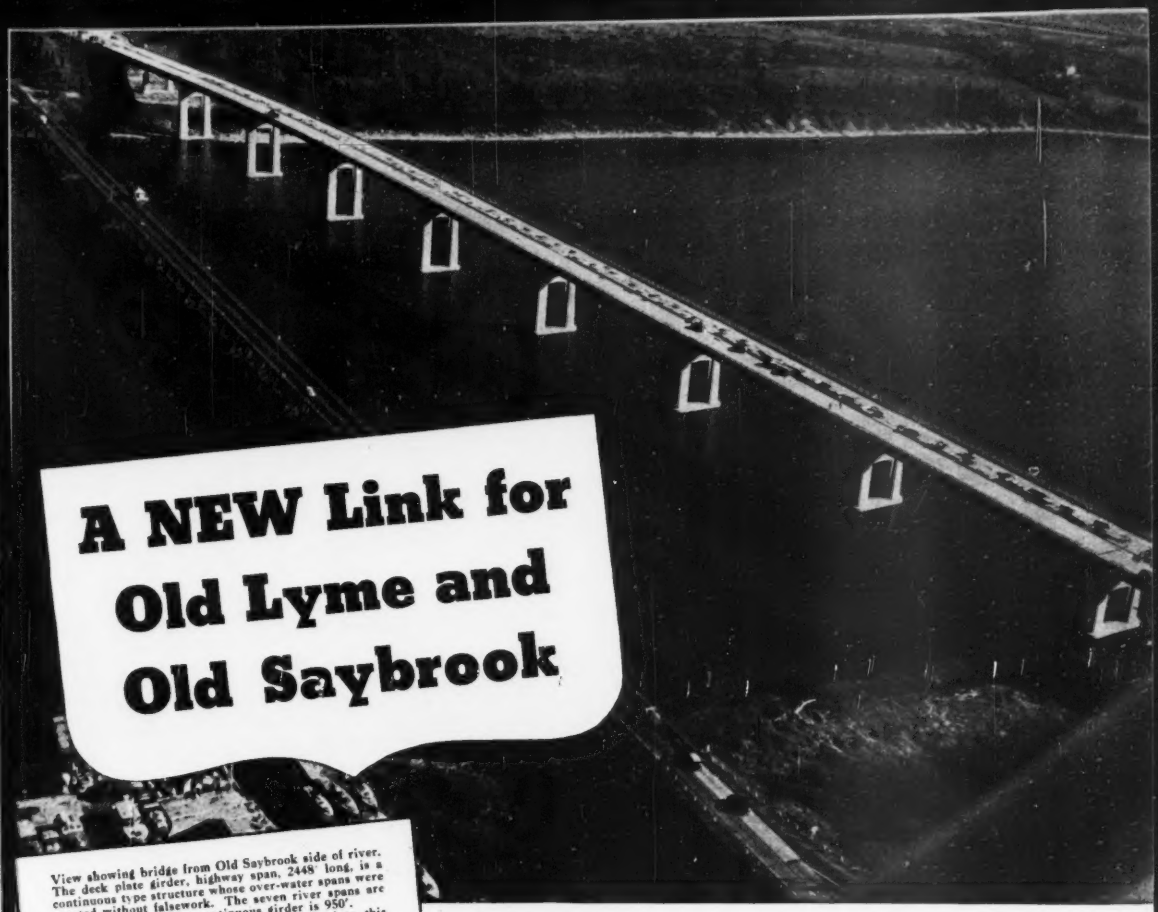
	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor— Building	Common Labor— Heavy Const
Atlanta	$2.50	$1.85	$2.00	$2.00	$2.00	$2.00	$2.00	$0.85	$0.95
Baltimore	3.00	2.20*d*	2.55*e*	2.40/2.60	2.25	2.25	2.25	1.25	1.25
Birmingham	2.50	1.95	2.20	1.875	2.20	2.25	2.25	1.00	1.10
Boston	2.625	2.25	2.55	2.60	2.70	2.50	2.45	1.65	1.65
Chicago	2.55	2.45	2.50	2.45	2.55	2.525	2.45	1.80	1.80
Cincinnati	2.575	2.25	2.425	1.60/2.60	2.425	2.45	2.40	1.535	1.46
Cleveland	2.575	2.575*f*	2.575	2.525	2.525	2.525	2.575	1.85	1.725
Dallas	2.50*t*	2.145	2.25	2.25	2.50*t*	2.375	2.375	1.075	1.275
Denver	3.00	2.10	2.10	2.25	2.50	2.41	2.40	1.40	1.35
Detroit	2.625	2.325	2.575	2.575	2.625	2.60	2.50	1.675	1.675
Kansas City	2.60	2.15	2.30	2.375	2.75	2.30	2.375	1.575	1.575
Los Angeles	2.625	2.12	2.30	2.07	3.125*a*	2.50	2.50	1.57	1.57
Minneapolis	2.40	2.12	2.275	2.07	2.50	2.35	2.32	1.52	1.52
New Orleans	2.50	1.875	2.25	2.125	2.00	2.30	2.25	1.025	1.025
New York	3.20	2.75*b*	3.00	3.00	3.20*a*	3.00*b*	2.75*b*	1.70	1.70
Philadelphia	3.00	2.34/2.40	2.65	2.50	3.00	2.75/3.00	2.75	1.375	1.675
Pittsburgh	3.00	2.50	2.625	2.65	2.625	2.575	2.80	1.50	1.50
St. Louis	2.833*c*	2.45	2.50	2.55	2.50	2.50	2.50	1.60	50/1.75
San Francisco	2.4125	2.225	2.50	2.19	2.8125	2.50	2.70	1.55	1.55
Seattle	3.00	2.195	2.395	2.33	2.495	2.395	2.50	1.795	1.83
Montreal*	1.40	1.25	1.30	1.30	1.40	1.35	1.15	.90	.80

a 6 hr. day *b* 7 hr. day *c* Incl 3% vacation stamp fund eff. 7/49. *d* 5¢/hr. reduction pending a new 2-yr contract. *e* 10¢ reduction eff. until May 1, 1950, when an increase of 10¢ hr. goes into effect. * Cost of living bonus now included in basic wage. ‡ Includes 10c per hr. tool replacement. † Plus $5.00 daily bonus.

MEXICO CITY PRICES

In Pesos, F.o.b. City		Sept. '49	Oct. '49
Common Wages—Building (8 hr. day)	av. per hr.	.57	.57
Common Wages—Heavy Const. (8 hr. day)	av. per hr.	.75	.75
Skilled Labor Wages			
Carpenters (8 hr. day)	av. per hr.	1.25	1.25
Bricklayers (8 hr. day)	av. per hr.	1.25	1.25
Struct. Iron Workers (8 hr. day)	av. per hr.	1.50	1.50
Struct. Steel Shapes			
3"-15" x 12 meters	per ton	1,050.00	1,050.00
Reinf. Stee. Corr. Rods			
⅜" x 12 meters	per ton	1,150.00	1,150.00
½" x 12 meters	per ton	1,130.00	1,130.00
⅝" x 12 meters	per ton	1,120.00	1,120.00
¾" x 12 meters	per ton	1,110.00	1,110.00
⅞" x 12 meters	per ton	1,110.00	1,110.00
1" x 12 meters	per ton	1,110.00	1,110.00
Grave truck load of 3½ cu. meters			
Blue Gravel	per tr. load	30.00	35.00
Rose Gravel	per tr. load	30.00	35.00
Cement. Std. Port. (Tolteca)	per ton	115.00	115.00
Lumber			
Mex. Sacred Fir (Oyamel)	per M ft.	375.00	375.00
1st Class Pine	per M ft.	700.00	700.00
2nd Class Pine	per M ft.	400.00	400.00

ENR Skilled Average: (Bricklayers, Carpenters, Ironworkers) $2.462. **ENR Common Average:** $1.478.



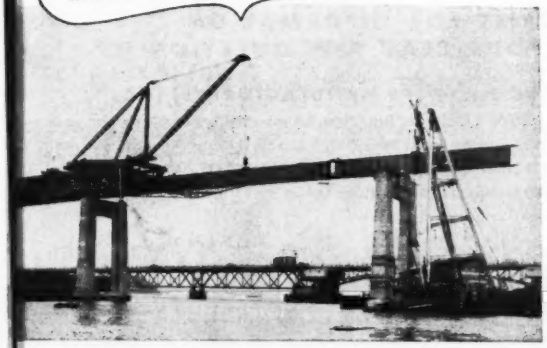
A NEW Link for Old Lyme and Old Saybrook

View showing bridge from Old Saybrook side of river. The deck plate girder, highway span, 2448' long, is a continuous type structure whose over-water spans were erected without falsework. The seven river spans are 240' long. The longest continuous girder is 950'.

Over 6000 tons of structural steel went into this bridge which carries two 24' roadways, separated by 4' center mall and flanked by two 3' sidewalks. U-S-S I-Beam-Lok was used for the gutters, center mall and (concrete filled) sidewalks. (Old bridge with bascule span which new bridge replaces shown at left.)

Progress photo showing American Bridge crews erecting 98-ton girders by use of traveling derrick and derrick boat.

Designed by: Connecticut State Highway Department. Consultants to Bridge Commission: Howard, Needles, Tammen & Bergendoff



FABRICATED AND ERECTED BY AMERICAN BRIDGE

THE Raymond E. Baldwin Bridge provides an important link carrying U. S. 1 over the Connecticut River between Old Lyme and Old Saybrook, Conn.

The superstructure for this monumental $6,500,000 bridge was fabricated and erected for the State of Connecticut by American Bridge Company. In addition, American Bridge furnished the concrete roadways, sidewalks, gutters and center mall.

Across the country, projects such as this have helped to establish the fact that for "jobs well done" you can depend on American Bridge personnel . . . American Bridge facilities . . . American Bridge experience.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI · CLEVELAND DENVER · DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA PITTSBURGH · PORTLAND, ORE. · ST. LOUIS · SAN FRANCISCO · TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS

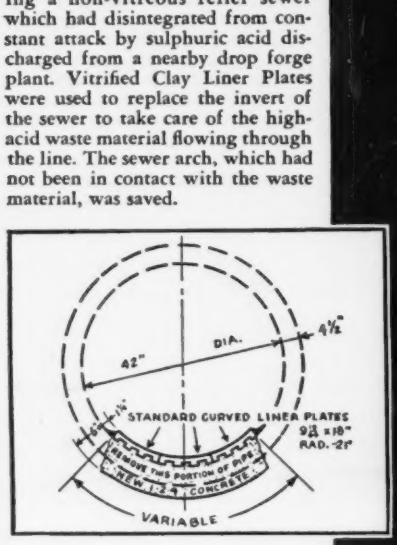
AMERICAN BRIDGE

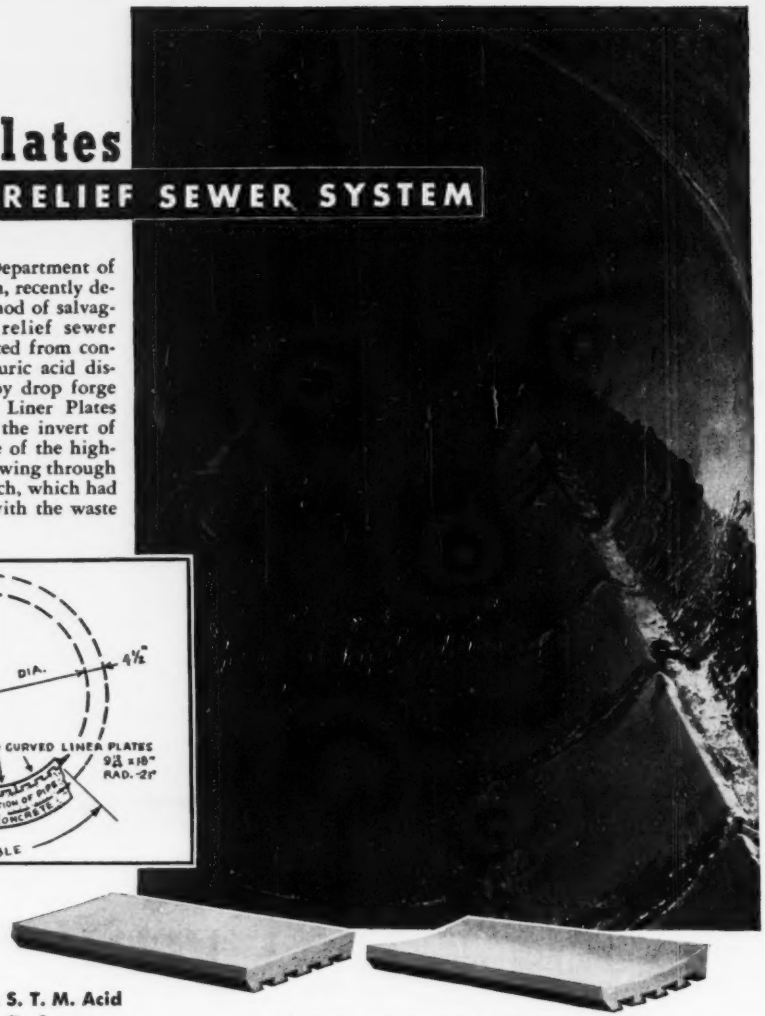
UNITED STATES STEEL

Clay Liner Plates

SALVAGE RELIEF SEWER SYSTEM

THE Engineering Department of Cudahy, Wisconsin, recently devised an unusual method of salvaging a non-vitreous relief sewer which had disintegrated from constant attack by sulphuric acid discharged from a nearby drop forge plant. Vitrified Clay Liner Plates were used to replace the invert of the sewer to take care of the high-acid waste material flowing through the line. The sewer arch, which had not been in contact with the waste material, was saved.





Clay Pipe Passes A. S. T. M. Acid Test With Plenty To Spare

Forty-eight hours suspended in fiery solutions of sulphuric, nitric, hydrochloric, or acetic acids . . . that's the rugged A. S. T. M. test for acid resistance! And Vitrified Clay Liner Plates come through without so much as a pockmark! That's the reason Clay is specified by leading engineers the world over for sewerage and waste disposal systems of all kinds. Clay Pipe and Clay Liner Plates are made from nature's own chemically inert material . . . it *never wears out!*

C-M52

WRITE FOR INFORMATION ON *YOUR* CLAY PIPE QUESTION

NATIONAL CLAY PIPE MANUFACTURERS, INC.

100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
703 Ninth and Hill Bldg., Los Angeles 15, Calif.
1105 Huntington Bank Bldg., Columbus 15, Ohio

Vitrified CLAY PIPE

CLAY PIPE NEVER WEARS OUT!

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

LOW BIDDERS

Md., Elkridge—Howard Co. Metropolitan Comn., Court House, Ellicott City, Oct. 26, Contr. 1, approx. 26,100 lin.ft. 6- to 12-in. c.i. watermains with valves, fire hydrants, etc., from A. & M. Constr. Co., 224 Abermarle St., Baltimore, **$116,124.** CD 10/19.

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., Oct. 31, approx. 24,850 ft. 42 in. supply line from Willis School Filtration Plant near Laurel to Columbia Pike near Paint Branch Prince George and Montgomery Counties, from Nance & Vivadelli, 2420 Wilson Blvd., Arlington, Va., **$639,920.** CD 10/18.

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., cancelled bids to have been opened Nov. 14, approx. 28,800 ft. 20-to 43-in. supply line from Columbia Pike near Paint Branch to Wheaton, Montgomery Co., Contr. 695-W. Will re-advertise. CD 10/27.

Mass., Boston—Commonwealth of Massachusetts, Metropolitan Distr. Comn., 20 Somerset St., Oct. 27, reservoir, Blue Hills Reservoir, Contr. 187, from Gil Wyner Co., Inc., 12 Newland St., Malden, **$746,097.** CD 10/13.

CONTRACTS AWARDED

Md., Hyattsville—Washington Suburban Sanitary Comn., 4017 Hamilton St., Contr. 654, approx. 2,570 lin. ft. 6-to 12-in. c.i. watermains, 3,100 ft. 10-to 15-in. plain concrete sewers, Urbania St. Georgia Ave. to Denley Rd., Glenmont Village, to Warren Edry & Pipe Corp., 11 Broadway, New York, N. Y., **$97,126.** Bids 9/6 CD 8/31.

SEWERS, WASTE DISPOSAL

BIDS ASKED

November 14

Pa., Phila.—Dpt. P. Wks., City Hall Annex, sewers, Schedule A, Cheltenham Ave. and 5 St. and Independence Ave. Approx. $75,000; Schedule B, for new housing, various locations. Approx. $100,000; Schedule C, for other than new housing, various locations. Approx. $100,000. A. A. Zane Hoffman, c/o owner, ch. engr. CD 3/1/46.

November 18

Minn., Renville—City, H. J. Haen, clk., 17,935 lin. ft. 8-to 18-in. storm sewers, 44 manholes, 120 catchbasins and 2 outlet pipes, $50,000. E. L. Chamberlain, Olivia, engr.

Bids Asked

Tex., Houston—Owner, c/o E. S. & Robert M. Atkinson, engrs., 745 First Natl. Bank Bldg., storm and sanitary sewers. $60,000.

LOW BIDDERS

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan Ave., repairing bldgs. and structures at Treatment Wks., Pumping Stations and other facilities, Contr. 49-37 (Gen-Mo), in Chicago, Skokie, Stickney, and Blue Island, from Chris Paschen Maintenance Co., 1450 N. Clybourn Ave., **$137,898.**

Ia., Boone—City, rejected bids Oct. 26, sewers and sewage plant, **$110,000.** Will readvertise early in 1950. CD 10/14.

Mass., Boston—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Boston, Oct. 27, sewerage pumping equip., Deer Island Pumping Station from P. J. & Riley & Co., 295 Highland St., Roxbury, **$165,920.** CD 10/11.

N. Y., Liberty—Town Bd. at office Whitaker Wells, clk., Sherwood Bldg., Oct. 20, Swan Lake Sewer Dist., Contr. 1, pipe, excavation, from Vellano Bros., 2341 Turner Ave., Schenectady, **$40,668;** Contr. 2, disposal plant, from Geico Builders, 180 E. 123 St., New York, Zone 35, **$149,777.** CD 9/13.

Tex., Houston—City, City Hall, 900 Brazos St., Oct. 26, Sect. 2, 36-to 72-in. Denver Harbor storm sewerage sys. from Russ Mitchell, Inc., 5304 Old Spanish Trail, **$257,719.** Est. $313,000. R. W. Lee, Commerce Bldg., engr.

CONTRACTS AWARDED

●Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan Ave., Zone 5, install electric apparatus incl. turbo-generator condensing equip., Stickney Sewage Treatment Works alterations, to Northern States Co., 33 N. LaSalle St., Zone 2, **$2,497,895.** Awarded 10/28.

N. S., Antigonish—Town, H. R. Chrisholm, clk., sewerage sys., to Chisholm Constr. Co., Antigonish. Approx. **$150,000.** Bids 10/14. CD 10/4.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

November 15	**November 18**
Maryland	**Kansas**
November 17	**Washington**
Virginia	**November 22**
	New York

Late in November

●O., Akron—City, 1,500 ft. bridge over Little Cuyahoga River, Ohio Canal, and valley from Adams St. to Glenwood Ave. $3,000,000. CD 11/11/48.

LOW BIDDERS

Missouri—State Hy. Dpt., Jefferson City, Oct. 28, nine 25 ft. rein.-con. slab span bridge over Black River Overflow road from Poplar Bluff easterly Rt. 60 Proj. F 204 (5), Sta 104 plus 37 and nine 25 ft. rein.-con. slab span bridge over Black River Overflow road from Poplar Bluff easterly Rt. 60 Proj. F 204 (5), Sta. 87 plus 87, both Butler Co., from O'Dell & Riney Constr. Co., Hannibal, **$50,569** each ***repairing Piers 5 and 6, bridge over Missouri River Rd. from Kansas City to North Kansas City Rt. 71 Proj. F 394 (3) Sta. 19 plus 0.247, Jackson and Clay Counties, from Bushman Constr. Co. 5 and Felix Sts., St. Joseph, **$150,475*****four 40 ft. and one 50 ft. rein.-con. deck girder span bridge over Hinkson Creek, road from Columbia east Rt. 40 Proj. F I 229 (8)-B Sta. 813 plus 60, and four 40 ft., two 50 ft. rein.-con. deck girder spans, over Big Cedar Creek Co., road from Boone Co. east towards Kingdom City, Rt. 40 Proj. RI. 385 (1), Sta. 132 plus 75, both Boone Co., from J. A. Tobin Constr. Co., 3700 Rainbow St., Kansas City, Kan., **$56,160** and **$79,174** respectively. CD 19/10.

N. J., Jersey City—Port of New York Auth., 111 Eighth Ave., New York, 11, N. Y., concrete deck and approaches for exit viaduct for Holland Tunnel, Contr. HT-13, from Grow Constr. Co., 313 W. 52 St., New York, 19, N. Y., **$779,560.** CD 10/13.

CONTRACTS AWARDED

●Fla., Deland—Bd. Comrs. Volusia Co., Deland, bridge and causeway across Halifax River at Port Orange, and bridge and causeway across Halifax River at Seabreeze in Daytona Beach, to T. A. Loving Co., Goldsboro, N. C., **$622,971** and **$566,020** respectively. Bids 10/27. CD 10/6.

●Maryland—State Rds. Comn., Lo8 E. Lexington St., Baltimore, Contr. CBB-12-1-47, superstructure for Chesapeake Bay Bridge, begins on west shore of Chesapeake Bay at Sandy Pt., Anne Arundel Co. and extends 21,286.45 ft. in easterly direction across bay toward Stevensville, Queen Annes Co. on eastern shore of Chesapeake Bay, to Bethlehem Steel Co., 701 Third St., Bethlehem, Pa., **$15,933,150.** Bids 3/8. CD 3/9, under LB.

N. Y., New York—Triborough Bridge & Tunnel Auth., Administration Bldg., Randalls Island, Zone 35, Contr. WI-1, pedestrian bridge over Harlem River at 103 St., to Peter F. Connolly Co. & Senior & Palmer, Inc., 2407 Bruckner Blvd., Zone 61, **$809,840.** Bids 8/12. **(Correction**—name over contractor). CD 10/7, under **CA.**

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

November 15	**Kansas**
Maryland	**November 22**
Massachusetts	**New York**
Texas	**November 23**
November 17	**California**
New Jersey	**New Jersey**
Virginia	**November 25**
November 18	**California**

November 14

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, asph. on 6 in. concrete paving E. 23 St. from Plimon to Avenue S; Avenue L, E. 98 to E. 99 Sts.; Lancaster Ave. from E. 7 to E. 12 Sts.; grading, curbing, flagging, asph. on 6 in. concrete repaving Avenue L, E. 96 St. to Rockaway Parkway.

November 15

N. Y., New York—President Manhattan Boro, Municipal Bldg., Zone 7, 3 in. sheet asph. on concrete repaving, John, 18 and 26 Sts., Livingston Pl., recurbing, Attorney, Christopher, Clinton, Commerce, Monroe, 2, and 22 Sts. CD. 8/25/44 and 9/7/44.

November 23

Tex., Houston—Owner c/o E. S. & Robert M. Atkinson, engrs., 745 First Natl. Bank Bldg., c. conc. paving. $75,000.

December 5

†Alaska—Alaska Road Comn., Juneau, clearing, grading, surf. 44.3 mi. Glenn Hy. between Palmer and connection with Richardson Hy., Sect. B-2. Mile 102 to Mile 146. Plans deposit $10. CD 8/17/45.

December 6

†Alaska—Alaska Road Comn., Juneau, clearing, grading, draining Glenn Hy., Mile 146 to Mile 189, Sect. B-3, between Palmer and connection with Richardson Hy. Plans deposit $10. CD 8/17/45.

LOW BIDDERS

Idaho—State Hy. Opt., Boise, grading 6.6 mi. of U.S. 93, Lembi Co., from Charles Shannon Co., Butte, Mont., **$187,037.** CD 6/5.

Kansas—State Hy. Dpt., Marysville, Oct. 11, grading 0.376 mi. Proj. 77-53 F 409 (7) Part I, and grading 2.349 mi. 77-58 F 409 (7), Part II, Marshall Co., from W. H. Bill Bennett Constr. Co., 1310 State St., Kansas City, Kan., **$141,481;** Bridge 77-58-14.1 Sta. 60 plus 40, 160 ft.-200 ft.-200 ft.-160 ft.-continuous steel truss, Proj. 77-58-F 490 (7) Part II, Marshall Co., from List & Clark Constr. Co., 729 Railway Exchange Bldg., Kansas City, Mo., **$202,450.** CD 9/22.

Kentucky—State Hy. Dpt., Frankfort, rejected bids Oct. 7, traffic bound limestone, RS 100-695, Shopville-Bent Rd., Pulaski Co., L.B. **$57,086;** traffic bound limestone 5.063 mi. RS 47-679 Vertrees Flaherty Rd., Hardin Co., L.B. **$95,878.** CD 10/13, under LB.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, Oct. 25, hy. Route 16, Mendon and Uxbridge, from M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., **$485,992.** CD 10/12.

●Missouri—State Hy. Dpt., Jefferson City, Oct. 28, from W. J. Menefee Constr. Co., Sedalia, c. conc. 4.94 mi. road from Columbia east to Callaway Co., Rt. 40 Proj. FI 229 (1)-A, **$365,579;** c. conc. 2.104 mi. road from Columbia east Rt. 40, Proj. FI 2292(8) B, **$209,250,** both Boone Co.; c. conc. 2.084 mi. road from Boone Co. east towards Kingdom City, Rt. 40, Proj. FI 385(1), Callaway Co., **$219,516***** from O'Dell & Riney Constr. Co., Hannibal, c. conc. 1.545 mi. road from Poplar Bluff easterly, Rt. 60 Proj. F 204(5), Butler Co., **$165,633***** from Cameron Joyce Co., Keokuk, Ia., c conc. 1.117 mi. road from Columbia east to Callaway Co. Rt. 40, Proj. FI 229(1) B, Boone Co., **$98,497.** CD 10/18.

†Montana—Pub. Rds. Admin., General Services Admin., 342 P. O. Bldg., Missoula, Oct. 27, clearing, grubbing, grading, draining 5.384 mi. Bannack Pass Hy., Beaverhead Co., from Nilson-Smith Constr. Co., Great Falls, **$118,225.** CD 10/17.

Ohio—State Hy. Dpt., Columbus, rejected bids Oct. 19, wid'n., pave Detroit Ave. from W. Central Ave to Wolcott Blvd., Lucas Co. L. B. **$280,421.**. Will re-advertise. CD 10/28, under LB.

Pa., Phila—Dpt. P. Wks., City Hall Annex, paving various locations, Schedules B-2-9-11-13-16-19, from Union Paving Co., Broad and Stiles St., **$82,118***** Schedules B-1-3-17-18-21, from Eastern Asphalt Co., Packard Bldg., **$76,712***** Schedules C-1-3-4-7 (D-2-3) and E, from Kelly Paving Co., 1347 E. High St., **$69,681***** Schedules B-4-7-12, from General Asphalt Paving Co., 6851 Rising Sun Ave., **$73,008***** Schedules B5-6-14-15, from Harry C. Erb, 1505 Race St., **$50,407***** Schedules B-10- and D-1, from Mack Paving & Constr. Co., Luzerne and C Sts., **$71,376***** Schedules F-2, from State Paving & Constr. Co., 1924 Arch St., **$53,734,** Dudley T. Corning, c/o owner, highways chief. CD 1/31/45.

Tex., Lubbock—City, cancelled bids to have been opened Oct. 27, street imprvs., 86,000 lin. ft. concrete curb and gutters; 156,259 sq. yd. asph. paving, etc. **$325,000.** Will re-advertise. CD 10/10.

CONTRACTS AWARDED

Louisiana—State Hy. Dpt., Baton Rouge, c. conc. 6.964 mi. Gueydan Morse Hy. State Rte. 128, F.P. 55-03-04, 312-02-05-262-03-04, Fed. Aid Secondary Projs. S-121 (1)8-107(2), Vermillion and Arcadia Parishes, to Flenninken Contr. Co., Box 634, Shreveport, **$529,370.** Bids 9/21, awarded 10/5 CD 9/28, under LB.

●New York—Bureau Contracts & Accounts, Albany, 0.51 mi. sect. Bronx River Parkway from Westchester Co. line south to point near 233 St., Bronx Co., to Charles F. Vachris, Inc., 827 Remsen Ave., Brooklyn, Zone 12, **$2,280,452.** Bids 8/24. CD 8/29, under LB.

South Dakota—State Hy. Comn., Pierre, base course bit. surf. 2.29 mi. S 153 (1), Jones Co., to Northwestern Eng. Co., Rapid City, **$52,900***** first course of base course 13.736 mi. S 197 (5), Minnehaha and Lincoln Counties, to J. L. Healy Constr. Co., 304 Western Surety Bldg., Sioux Falls, **$57,173***** first course of base course 18.228 mi. F 237 (12), Todd Co., to Myrl Clark, Tyndall, **$72,890.** Grand total $182,963. Bids 10/25. CD 10/12.

EARTHWORK, WATERWAYS

BIDS ASKED

About November 15

†Illinois—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, Mo., crushed stone or grav. surf. approx. 6.4 mi. top of levee and approaches, east bank of Mississippi River between approx. river miles 159.5 and 166, above mouth of Ohio River, Proj. II-C, Columbia Drainage & Levee Dist., Monroe Co.

November 16

B. C., New West Minister—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., North Arm Jetty, west of Ione Island on Fraser River. Approx. $175,000. R. Blais, c/o owner, engr. CD 10/4.

About November 17

†Illinois—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, 1, Mo., grav. or crushed stone surf. 5.5 mi. top of levee and approaches, Proj. II-C, (Edgar Lakes, Prairie Du Rocher, and Modoc D. & L. Dist.) in Prairie Du Rocher and vicinity, Randolph Co.

November 18

†North Dakota—U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, emergency gate, Garrison Dam Proj., Inv. 30. CD 6/1/44.

On or About November 22

†South Dakota—U. S. Eng., Administration Bldg., Fort Peck, Mont., test boring and drilling for subsurface investigation at site of Cold

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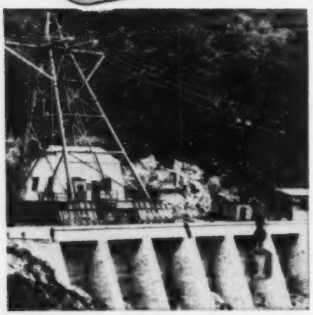

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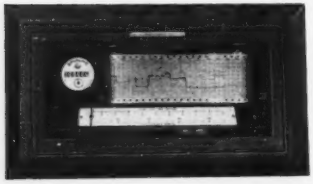

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Brook Dam, Fall River Basin, approx. 3 mi. north of Hot Springs, Serial No. CIVENG-24-016-50-20.

November 22

†**Arizona**—Bureau Reclamation, Dept. Interior, Yuma, Wellton-Mohawk Pumping Plants 1, 2 and 3, Wellton-Mohawk Div., Gila Proj., Spec. 2804. Extended date. L. N. Mc Clellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. CD 10/5.

●**Fla., Ft. Lauderdale**—South Florida Control Dist., West Palm Beach, 6 mi. Levee L-35-A, near here, $1,500,000. Extended date.

†**Illinois**—U. S. Eng. 826 U. S. Courthouse & Custom House, 1114 Marget St., St. Louis, 1, Mo. constr. East Alton Pumping Station Wood River Drainage and Levee distr., Proj. I-E, Madison Co., CIVENG 23-065-50-27. CD 10/26.

†**Montana**—Bureau Reclamation Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., exploratory drilling for investigations of Helena Valley tunnel site, Missouri River Basin Proj., Spec. R6-6GP-13 (Region 6), L. N. Mc Clellan, c/o owner, ch. engr. CD 8/25/44.

Tex., Houston—Port Comm., c/o Wharf 13, Houston, dredging 50,000 cu. yd. earth in channel in Turkey Bend sect. of upper channel. $30,000. Extended date. CD 9/28.

LOW BIDDERS

†**New Mexico**—Bureau Reclamation, Dpt. Interior, Old Post Office Bldg., 7 and Taylor Sts., Amarillo, Tex., Oct. 27, rehabilitation, reconstruction, imprv. 2¼ mi. Fort Sumner Main Channel, Spec. 2796, from Pecos Valley Constr. Co., Carlsbad, **$274,061.**

†**Oregon**—Bureau Reclamation, Dpt. Interior, Bend, rejected bids Oct. 11, construct Northwest Unit pipeline, Grants Pass Irrigation Dist., Spec. R1-55 (Region 1) Deschutes Proj. L. B. **$112,530.** CD 10/18, under LB.

B. C., North Vancouver—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Oct. 26, dredging at Burrard Inlet, from British Columbia Bridge & Dredge Co., Ltd., 544 Howe St., Vancouver. Approx. **$175,000.** CD 10/11.

CONTRACTS AWARDED

●†**California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, 2.22 mi. section river channel and appurtenances Tujunga Wash Imprvt. Los Angeles River to Hansen Dam, Magnolia Blvd. to Van Owen St., Los Angeles Co. Drainage Area, near North Hollywood, CIVENG-04-323-50-7, to Bressi & Brevander Constr. Co., 6950 Tujunga St., Los Angeles, **$1,854,624.** Bids 10/4. CD 10/13, under LB.

Sask., Saskatoon — TAXI STRIPS — Government of Canada, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., two 150 ft. wide taxi strips, etc. at Airport, day labor, **$100,000.** CD 9/5/46.

AIRPORTS AND AIRBASES

CONTRACTS AWARDED

●**La., Shreveport**—AIRPORT PAVING, etc.—City, City Hall, constr. municipal airport runway paving, to City Constr. Co., 2411 Inwood Rd., Dallas, Tex., **$1,196,495**; clearing and grading, to M. R. Thomason, P. O. Box 1847, Montgomery, Ala., **$662,046.** Bids 10/13, awarded 10/25. CD 10/19, under LB.

PUBLIC BUILDINGS

BIDS ASKED

November 15

Ark., Russellville—ARMORY—Military Dpt., State Capitol Bldg., Little Rock, armory. Plans deposit $25. Wittenberg, Delony & Davidson, 402 Pyramid Bldg., Little Rock, archts.

Minn., Minneapolis — MEDICAL CENTER IMPRVS.—University of Minnesota, R. S. Callaway, purch. agt., 323 Administration Bldg., Minneapolis, removing, relocating underground utilities for Mayo Medical Center on Main Campus, $100,000. Plans deposit $15 C. M. Johnston, 715 Empire Bank Bldg., St. Paul, archt. CD 10/1/48.

N. Y., Elmhurst—LIBRARY—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general contract, plumbing, heating and ventilating, electrical work and lighting fixtures for Elmhurst Regional Branch Library and addn., 86-01 Broadway, Queens Boro. Plans deposit $25.

N. C., Buxton—SCHOOLS—at office County Supt. Schools, Manteo, 260x294 ft. elementary and high school, for Dare Co. Bd. Educ., Manteo. Plans deposit $25. Extended date. B. H. Stephens, New Bern, archt. CD 10/4.

N. C., Fairmont—HIGH SCHOOL—Fairmont School Bd., office supt., Fairmont, Rosenwald High School, Linden Ave. and Oakwood St. Plans deposit $25 general; $10, plumbing, heating and electrical work. George R. Berryman, Commercial Bldg., Raleigh, archt. CD 3/31.

November 17

†**N. Y., Rochester**—POST OFFICE—Pub. Bldgs. Admin., 731 Custom House, New York, Zone 4, misc. repairs to U. S. Post Office. **FWA.** CD 9/30.

Okla., Woodward — HOSPITAL—City, 2 story, concrete and steel frame and fdn. hospital, $450,000. Joseph Koberling, Ct. Arcade Bldg., Tulsa, archt. CD 10/18.

November 18

†**La., Plaquemine** — MOTOR VEHICLE STORAGE—U. S. Property Disbursing Officer,

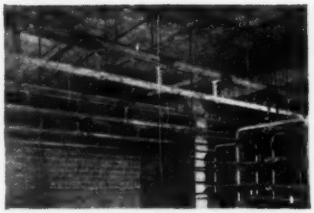
(Continued on page 116)

for anchoring for fastening

for suspending for carrying

TRUSCON SLOTTED INSERTS

For Concrete Construction



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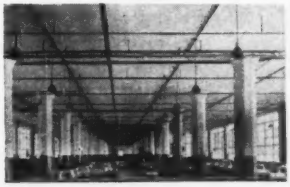

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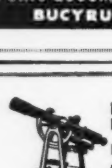

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(Continued from page 114)

Headquarters Bldg., Jackson Barracks, New Orleans, 1 story, 52x146 ft., brick motor vehicle storage bldg., Inv. 16-104-50-8. Plans deposit $20. S. N. Applewhite, 424 Millandon St., New Orleans, engr.

Mass., Needham — SCHOOL—Town, Wm. Bailey, chn., Town Hall, brick steel William Mitchell School addn. Plans deposit $25, refundable to bidders. CD 10/11.

N. C., Kings Mountain — HOSPITAL — Bd. Trustees Cleveland Co. Hospital, Earl Hamrick, chn., Shelby Hospital, Shelby, general hospital. Plans deposit $30 general, $20 plumbing, heating and electrical work. Walter W. Hook & Assoc., Inc., 305 W. 4 St., Charlotte, archts. CD 4/26/46.

November 22

†N. M., Las Cruces — HEADQUARTERS BLDG.—U. S. Eng., P. O. Box 1538, Albuquerque, 1 and 2 story, 146x240 ft., 28,600 sq. ft. technical headquarters, air-conditioning. Serial No. Eng-29-005-50-16. $675,000. Extended date. CD 10/28.

LOW BIDDERS

†Calif., Oakland—BARRACKS—U. S. Eng., 180 New Montgomery St., San Francisco, Oct. 27, 225 man capacity barracks for enlisted men, Oakland Army Base, Job. 2934, Serial ENG-4-203-50-104, from Parker, Steffens & Pearce, 135 S. Park St., San Francisco, $398,977. CD 10/5.

●Ill., Chicago — HOSPITAL—University of Illinois, Urbana, Sept. 28 general contract 14 story, 187x150 ft., steel granite, cut stone education and research hospital in West Side Medical Center, concrete slab floors, from Patrick Warren Constr. Co., 815 N. Kedzie St., Zone 22, $2,980,850***heating, from Hanley & Co., 1503 S. Michigan St., $636,140***plumbing, from Economy Plumbing & Heating Co., 1308 S. Pulaski St., $331,900***electrical work, from Wadeford Electric Co., 205 W. Wacker St., $536,878***ventilating, from Bloomer Heating & Ventilating Co., 1237 W. 47 St., $261,605. CD 9/15.

Ind., Lafayette—SCHOOL—Bd. School Trustees, High School Bldg., Oct. 24, school, main bldg., and 6 addnl. room wing, from A. E. Kemmer, 3rd and Brown Sts., $236,150 and $341,350 respectively. Est. $350,000. CD 10/12.

Mont., Missoula — SCHOOLS — Missoula School Dist., general contract 3 schools, from Hitz Constr. Co., 2111 Fourth Ave. N., Billings, $743,441.

O., Macedonia—DORMITORY COTTAGES—Dpt. P. Wks., Ohio Dpts. Bldg., S. O. Linzell, dir., Columbus, rejected bids Sept. 20, 3 cottages. Will re-advertise. CD 9/12.

CONTRACTS AWARDED

Idaho, Pocatello—LIBERAL ARTS—State Dpt. P. Wks., Boise, liberal arts bldg., to Brennan & Calhoun, Pocatello, $530,854. Awarded 10/29. CD 11/1, under LB.

Minn., Rochester—RECEIVING and TREATMENT—State Dpt. Admin., State Capitol, St. Paul, general contract receiving and intensive treatment bldgs. at State Hospital, to Stocke & Olson, Rochester, $636,900. Bids 10/18. CD 10/4.

†N. M., Albuquerque—HEATING PLANT—U. S. Eng., Box 1538, central heating plant, Sandia Base, Serial No. 291-50-07, to Maxey & Leftwich, Box 4031, $487,933. Bids 10/20. CD 11/1, under LB.

●O., Cincinnati—HOSPITAL—Hamilton Co., Courthouse, hospital, to Frank Messer & Sons, 4612 Paddock Rd., $3,941,331. Bids 8/12, awarded 10/26. CD 8/29, under LB.

●Ont., Toronto — STEAM GENERATING PLANT—Hydro Electric Commission of Ontario, 620 University Ave., steel superstructure steam generating plant, to Canadian Bridge Co., Ltd., 217 Bay St. Total cost of project including equipment $70,000,000. Stone & Webster Engineering Corp., 90 Broad St., New York, N. Y. are engineers and construction managers for project. Western Foundation Co., 2 Park Ave., New York, N. Y. is driving piles. (Correction—name of contractor). CD 10/10, under CA.

COMMERCIAL BUILDINGS

BIDS ASKED

November 18

Ill., Belleville—RETREAT—King's House of Retreats for Belleville Diocese of Catholic Church, c/o Oblate Fathers of Mary Immaculate, Rev. Alphonse Simon, O.M.I., St. Henry's Seminary, 5901 W. Main St., 2 story, attic, part bsmnt. 28x183 ft. dormitory; 1 story, 67x74 ft. refectory and kitchen bldg.; 1 story, bsmnt., 34x46 ft. sisters house; temporary chapel, alterations and improvements in present stable to be later relocated, 42 acre site, Five Hills Acres, between N. 66 and N. 68 Sts. $500,000. Extended date, Saunders & Johnson, Chemical Bldg., 721 Olive St., St. Louis, Zone 1, Mo., archts. CD 9/6.

Bids Asked

Ill., Villa Park—RESIDENCES—Herzog & Kuntz Realty Co., 1184 Walnut Ave., Des Plaines, 60 one story 4 room brick residences Madison and Addison Rd. $325,000. A. J. Del Bianco, 4938 W. Irving Park Ave., Chicago, Zone 41, archt.

SOON LETS CONTRACT

Conn., Mystic — TELEPHONE — Southern New England Telephone Co., 227 Church St., New Haven, soon lets contract brick, steel,

stone telephone bldg., exchange facilities, dial expansion. $250,000. Douglas Orr, 96 Grove St., New Haven, archt. CD 10/26.

Ill., Springfield—OFFICE—Chicago & Illinois Midland Ry. Co., E. M. Loebs, ch. engr., Illinois Bldg., soon lets contract 1 story 170x250 ft., steel, concrete office, $280,000. Naess & Murphy, 80 E. Jackson St., Chicago, Zone 4, archts.

La., New Orleans — HOUSING — American Legion Housing Corp., Post 333, 107 Camp St., soon lets contract 101 one story single frame residences, Paris Ave. and Filmore St. Rene F. Gelpi, 730 Gravier St., archt. CD 8/29.

LOW BIDDERS

Minn., Northfield—DORMITORY—St. Olaf College, C. M. Granskau, pres., Oct. 21, general contract girls' dormitory, from Naugle-Leck, Inc., 714 Baker Bldg., Minneapolis, $434,382. CD 10/5.

CONTRACTS AWARDED

N. J., Millville—RESIDENTIAL DEVELOPMENT—Arnold Constr. Co., 326 Fulton St., residential development, Arch St., etc., separate contracts, $800,000.

N. J., Riverside—APARTMENT—Riverside Manor, Inc., 734 Walnut St., Phila., Pa., apartment, 7 St. and Fairview Ave., separate contracts, $800,000. Dante D'Anastasio, 1815 Federal St., Camden, archt.

N. J., Riverton and Lenola—RESIDENCES—Firth & Godley Homes Co., Inc., 220 N. 7 St., Camden, 10 residences, Bank Ave. and 25 residences, Lenola, separate contracts, $290,000.

N. Y., Mount Vernon—APARTMENT—Alden Place Corp., 4 Valley Rd., Bronxville, 30 family apartment, 12-30 Alden Pl. Owner builds. $250,000. Joseph T. Sibley, 56 Palmer Ave., Bronxville, archt.

N. Y., New York—OFFICES and STUDIO APARTMENT—Children's Aid Society, 105 E. 22 St., Zone 10, offices and studio apartment, 150-156 E. 45 St. to Irons & Reynolds, Inc., 420 Lexington Ave., Zone 17. Approx., $350,000. CD 9/23.

N. Y., New York — HOUSES — Evander Constr. Corp., 2415 Hering Ave., New York, Zone 67, 22 two story houses Tomlinson, Haight and Morris Park Aves. Owner builds. Approx. $250,000. De Rose & Cavalieri, 370 E. 149 St., Zone 55, archts.

●**N. Y., Wantagh**—HOUSES—Housing Associates, c/o Matern & York, archts., 90-04 161 St., Jamaica, 169 houses to be known as Forest Lake Manor, Jerusalem Ave. Owner builds. Approx. $1,300,000.

O., Cincinnati—RESIDENCES—Bayer Bros., 1553 Oak Knoll Dr., 13 two story basmt., 31x46 ft., brick, residences, separate contracts. $260,000. Lee P. Firth, 3040 Madison Rd., archt.

●**O., Cincinnati** — RESIDENCES — Triton Bldg. Co., (H. Adnee in charge) 1920 Beising Ave., North College Hill, one hundred fifty-seven 1½ story brick, concrete bsmnt., residences, separate contracts. $1,805,500.

O., Cleveland—CONVENT and RECTORY—St. Timothy's Roman Catholic Church, 4309 E 13 St, convent and rectory, E. 131 St. and Cranwood Dr., to Hebing Co., 1832 W. 54 St., Approx. $250,000. Bids 9/27, awarded 10/24. CD 9/22.

O., Delaware — STUDENT UNION — Ohio Wesleyan University, Delaware, Memorial Student Union Bldg., S. Sandusky St. and College Ave. to E. J. Benes & Co., 2702 Terminal Tower, Cleveland. Approx. $350,000. Awarded 10/15. R. L. Rosser, 410 W. 21 St., Dayton, archtt. CD 11/15/44.

O., East Cleveland—APARTMENTS—H. & K. Dolinsky, 1931 Hayden St., four 2 story, brick, block apartments, separate contracts, $310,000. Pasqual Laurie, 1312 Carnegie St., Cleveland, archt.

O., Silverton—RESIDENCES—Sharp & Isford, 6645 Elwynne Dr., forty-one 1½ story, bsmnt., brick, concrete residences, one car garages separate contracts. $615,000. CD 10/13/48.

Pa., Barren Hill—RESIDENCES—David J. Friednan, 6408 Comac St., Phila., residential development, Germantown Pike, separate contracts, $288,000.

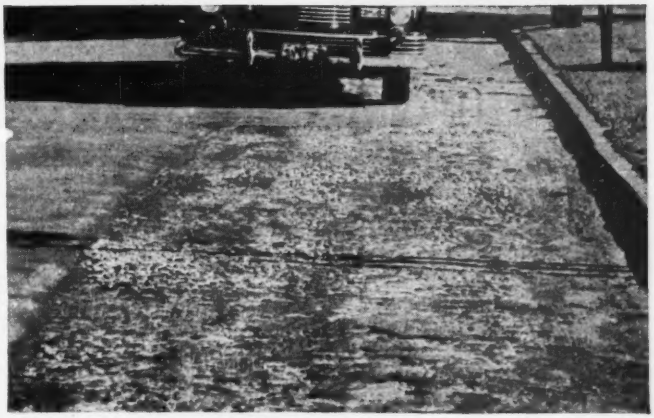
Pa., Phila.—RESIDENCES—Broad Constr. Co., 6333 N. Broad St., residential development, Hattersby St. and Levick St., separate contracts. $286,600.

Pa., Phila.—HOSPITAL—Chestnut Hill Hospital, 8915 Germantown Ave., hospital addn., to Frank V. Warren, Inc., 925 W. Thompson St., $300,000. Gravell & Duncan, 1700 Walnut St., engrs. CD 1/26.

Pa., Phila.—BANK—Germantown National Bank & Trust Co., Germantown Ave. and School Lane, bank addns., alterations, to Stoffel & Tillotson, 2043 Eastburn Ave., $340,000. CD 9/9/48.

Pa., Phila.—RESIDENCES—K. V. S. Homes, 702 Rodman Ave., Jenkintown, residential development, Evans St., etc., to Franklin B. Storch, 702 Rodman Ave., Jenkintown. $250,000. G. Harold Murphy, 1621 Sellers St., archt.

Pa., Phila.—RESIDENCES—K. V. S. Homes, 702 Rodman Ave., Jenkintown, residential development, Lott St., etc., to Franklin B. Storch,



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702 Rodman St., **$250,000.** G. Harold Murphy, 1621 Sellers St., archt.

Pa., Phila.—RESIDENCES—Paul E. Kelley, 3148 Knorr St., residential development, Stevens St., separate contracts, **$250,000.**

Pa., Phila. — RESIDENCES — Frank Kiely, 611 Arbutus St., residential development, Murdock Rd., separate contracts, **$250,000.** Christian H. Fries, 3701 N. Broad St., archt.

Pa., Phila.—RESIDENCES—A. P. Orleans & Co., 100 W. Rockland St., residential development, separate contracts. **$250,000.**

Pa., Phila.—RESIDENCES—A. Singer Sons, Inc., 37 S. 59 St., residential development, Lardner St., separate contracts. **$250,000.**

Tex., Dallas — DWELLINGS — Edward T. Dicker, 161 Laurel Land Rd., 50 dwellings, to L. G. Mason Co., 1611 N. Washington St., **$325,000.** CD 6/21/48.

Tex., Fort Worth—COMMUNITY CENTER—Beverly Hills Development Co., 209 W. 5 St., community center, Unit 3, own forces. **$525,000.** CD 5/9.

Tex., Fort Worth — DUPLEXES — J. W. Lancaster, 3425 Denton Hy., 98 duplexes, own forces. Approx. **$950,000.** CD 10/20.

Tex., San Antonio — HOUSING — Wallace Rogers & Sons, Travis Bldg., addnl. housing, in Shavano Park, own forces. **$375,000.** CD 10/20.

Tex., Trinity—HOUSING—Trin-Tex Builders, Inc., Trinity, housing. Owner builds. Approx. **$300,000.** CD 10/20.

Wis., Watertown—BUILDINGS—Northwestern College, Watertown, general contract college buildings addns., alterations, to Maas Bros. Constr. Co., 712 W. Main St. Toltz, King & Day, Inc., 1509 Pioneer Bldg., St. Paul, Minn., archt. and engr.

Wis., Wauwatosa—APARTMENTS — Underwood Apartments, Inc., 4417 W. North Ave., Milwaukee, Zone 8, six 30x123 ft., brick veneer apartments, block fdn., to Jas. L. Callan, Inc., 4417 W. North Ave., Milwaukee, Zone 8. Approx. **$300,000.** E. A. Kiely, c/o contractor, archt.

● **Wyo., Cheyenne** — HOSPITAL — Sisters of Charity of Leavenworth, Xavier, **Kan.**, 4 story, bamnt., 75x220 ft., 125-bed Mountview Hospital addn. with 3 wings, to Olson Constr. Co., 1549 S. 2 St. West, Salt Lake City, Utah. **$1,128,900.** Bids 10/6, awarded 10/24. CD 10/18, under LB.

INDUSTRIAL BUILDINGS

BIDS ASKED

Conn., Colchester—TERMINAL—Schuster's Express, Inc., 56 Norwich Ave., 1 story, 70x140 ft., cinder block, concrete, steel express terminal addn., Norwich Ave., **$68,000.** Malcolm R. Knox, 57 Farmington Ave., Hartford, archt.

Conn., New Canaan—WAREHOUSE, etc.—Katzenbach & Warren, lessee, 49 E. 53 St., New York, N. Y., 2 story, 75x100 ft., rein.-con., masonry steel warehouse with offices, Pine St., **$80,000.** William A. Gray, Redding, archt.

Ill., Chicago—PLANT—Peerless Packing Co., 7620 S. Aberdeen St., Zone 20, steel, brick, concrete packing plant addn. $80,000. Smith, Brubaker & Eagan, 20 N. La Salle St., Zone 3, archts.

N. J., Camden—PLANT—Shingle Leather Co., 1300 Walnut St. (selected list of bidders) mfg. bldg. addn. $70,000. Dante D'Anastalo, 1815 Federal St., archt.

Pa., Marcus Hook—PLANT—Congoleum-Nairn Co., Marcus Hook, mfg. plant alterations to Bldg. 12. Approx. **$68,000.** George Kazlusky, c/o owner, ch. engr.

Pa., Phila.—FACTORY—The Ballinger Co., archt., 121 N. Broad St., factory addn., for John A. Zimmerman & Sons, Inc., Erie and Castor Aves., **$100,000.**

Pa., Phila.—MARINE WAREHOUSE PLATFORMS—Gulf Oil Corp., 30 St. and Penrose Ave., marine warehouse platforms and railroad crossover. $100,000. R. C. Roether, c/o owner, ch. engr. CD 5/27/48.

Pa., Phila.—GARAGE—William T. Jones & Sons, Inc., 6330 N. Broad St., garage addn. $70,000. Sheldon A. Keast, 4845 N. 18 St., engr.

SOON LETS CONTRACT

Ark., Magnolia—PLANT—Magnolia Ice & Coca Cola Bottling Co., Magnolia, soon lets contract 2 story, 83-117 ft. steel frame, bottling plant, concrete fdn., **$90,000.** Extended date. Denheimer & Cox, Texarkana Natl. Bank Bldg., Texarkana, engrs. CD 10/25.

Kan., Great Bend—SHOP, etc.—Central Kansas Electric Co-operative, Great Bend, soon lets contract shop, garage and administration bldg., $50,000. A. C. Kirkwood & Assoc., Wirthman Bldg., Kansas City, Mo., engrs.

Pa., Phila.—PAINT FACTORY—Sears Roebuck & Co., 4640 Roosevelt Blvd., soon lets contract paint factory, $300,000. **(Correction**—cost.). CD 10/13.

Tex., Waxahachie—SHOP—Dick Hipp Buick Co., Waxahachie, soon lets contract auto shop, display, parts, $70,000. Goodwin, Cavitt & Lane, 4801 Lemmon St., Dallas, archts.

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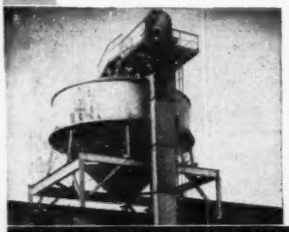

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Wis., Menasha — BUILDING — Geo. Banta Publishing Co., 450 Ahnaip St., soon lets contract 1 story, 126x127 ft., steel, brick "B B" Bldg. addn., concrete fdn. and floor. R. N. Le Vee & Assocs., 203 E. College Ave., Appleton, archts.

Wis., Milwaukee — FACTORY — Weyenberg Shoe Mfg. Co., 234 E. Reservoir Ave., Zone 12, soon lets contract 2 story, 67x92 ft., steel, concrete block factory addn., concrete fdns. and floors. R. W. Dwyer, 3316 W. Wisconsin Ave., Zone 8, archt.

LOW BIDDERS

Tex., Dallas—AUTO SHOP—Strayhorn-Lacy Buick Co., 606 N. Edgefield St., Oct. 25, auto shop, sales, service, from Jansen Constr. Co., 1203 Powhattan St., **$116,222.** Adams & Adams, 1707½ Main St., archts.

CONTRACTS AWARDED

Conn., Manchester—SALES and SERVICE—Stewart Dillon, 130 Center St., 1 story, 54x145 ft., brick, concrete, cinder blocks sales and service, Main St. and Leonard Sts., to Wennergren Constr. Co., 91 Alton St., **$68,000.**

Ill., Chicago—FOUNDRY—Acme Aluminum Foundry Co., 6843 S. Bell St., Zone 36, 1 story, brick, steel, nonferrous foundry addn., to Federici Constr. Co., 6216 S. Oakley Ave., Zone 36, **$70,000.** Awarded 10/20. L. I. Janik, 110 S. Dearborn St., Chicago, Zone 3, archt.

Ill., Chicago — PLANT — Greater Pullman Port, Inc., 10935 S. Michigan Ave., Zone 28, 3 story, 34x38 ft. steel, concrete, brick, terra cotta newspaper plant addn., alterations, to Henderson Constr. Co., 24 W. Delaware Parkway, Hammond, Ind. Norman Bouchard, Western Springs, and South Park Publishing Shop, 357 E. 115 St., Zone 28. Approx. **$75,000.**

Ill., Chicago—GRAIN ELEVATOR—Illinois Agricultural Assoc. 10701 S. Muckegon St., Zone 17, 25x36 ft. grain elevator, to Chris Rasmussen Co., 1448 W. Adams St., Zone 7, Approx. **$75,000.** Awarded 10/26. E. C. Furrer, 82 W. Washington St., Zone 3, archt.

Kan., Lakin — GRAIN ELEVATOR — Gano Grain Co., Lakin, grain elevator, to Hamilton, Nickroy & Mong Constr. Co., Salina, **$125,000.**

Mo., St. Louis—COOLER and YEAST—Falstaff Brewing Corp., 3684 Forest Park Ave., Zone 8, 5th and 6th floor alterations of cooler and yeast bldg., 2000 Madison St., to Frain-Colnon Contg. Co., 1706 Olive St., Zone 3, O. W. Stiegemeyer, 452 S. Price St., Ladue, St. Louis, Zone 5, archt. CD 4/29/48.

Mo., St. Louis—FACTORY—Joseph Koch, 3239 Alfred Ave., Zone 16, 1 story, 40x120 ft. concrete block factory addn., to Juengel Constr. Co., 201 Worthington Bldg., Lindbergh and Tesson Ferry Rd., Affton, St. Louis, Zone 23, James T. Wisnewski, 705 Chestnut St., Zone 1, archt.

Mont., Billings—WAREHOUSE, etc.—Marshall Wells Co., Lake Ave. S, Duluth, Minn., general contract 22x275x340 ft., brick, steel warehouse and office, to Cahill-Mooney Constr. Co., 420 N. 25 St., **$263,100.** Chandler C. Cohagen, Hedden Bldg., archt. CD 12/28/44.

Neb., Lincoln—GARAGE—William Gold II, c/oGold & Co., 11 and O Sts., parking garage, to Olson Constr. Co., 410 S. 7 Sts., **$118,775.** Smith-Hinchman & Grylls, 800 Marquette Bldg., Detroit Mich., archts.

N. J., Camden—MILL—Mac Andrews & Forbes, 3 and Jefferson Sts., mill addn., to Barclay White Co., 22 N. 36 St., Phila., Pa., **$85,000.**

N. J., Trenton — DEPOT — Wm. Freihofer Baking Co., Union Blvd. and Quebec St., Allentown, Pa., reloading depot, Lawrence Twp., to Lewis C. Bowers & Sons, Inc., Rollingmeade, Princeton, **$80,000.** R. A. Bowers, 14 Hamilton Ave., Princeton, archt.

N. C., Goldsboro—PLANT—Carbide & Carbon Chemical Corp., 30 E. 42 St., New York 17, N. Y., pyrofax plant, to R. N. Rouse & Co., Inc., 1019 N. Williams St. Bids 9/12. CD 9/8.

O., Toledo—PLANT—F. S. Royster Guano Co., 4100 Creekside Rd., 320x60 ft. fertilizer plant for product storage, 30 ft. high, to A. Bentley & Sons Co., 201 Belmont St. Approx. **$70,000.**

Okla., Orienta—GRAIN ELEVATOR—Major Co-operative Elevator Assoc., Orienta, 250,000 bu. concrete grain elevator, to Johnson-Sampson Co., 100½ E. Iron St., Salina, Kan., **$72,500.** Est. $75,000. Awarded 10/18.

Pa., Harrisburg — WAREHOUSE — Esso Standard Oil Co. of Pennsylvania, 21 S. 12 St., Phila., 1 story, masonry warehouse, to Shelley Spera Constr. Co., Inc., 227 State St., **$70,000.** Bids 10/20. CD 10/13.

Pa., Lansdale—STORAGE—American Encaustic Tiling Co., Lansdale, 1 story, 70x141 ft., brick, steel storage bldg. to A. Wilson & Co., 136 Liberty St., New York, N. Y. **$75,000.**

Pa., Morrisville—PACKING HOUSE—Warner Co., 219 N. Broad St., Phila., packing house, to Eastern Constr. Co., 809 E. State St., Trenton, N. J. Approx. **$75,000.** CD 10/19.

Tex., Corpus Christi — LAREDO POWER STATION RESERVOIR—Central Power & Light Co., 120 N. Chaparral St., water supply reservoir for Laredo Power Station, to Killian-Keller Co., P. O. Box 1981, San Antonio, **$57,325.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 2/3/47.

Tex., Houston—WAREHOUSE—Duncan Coffee Co., 2424 Providence St., warehouse, to

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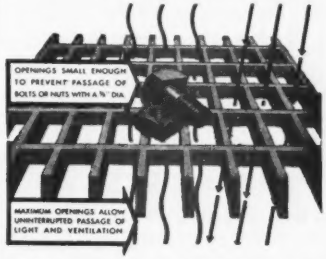
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Wash., Seattle—GARAGE—Standard Oil of California, 225 Bush St., San Francisco, Calif., garage, to Howard S. Wright & Co., Inc., 414 Yale Ave. N., Zone 14, **$90,000.** CD 9/1.

Wis., Milwaukee—PLANT—Luick Dairy Co., 1132 N. 6 St., Zone 3, 1 and 2 story, 161x271 ft., steel, brick, tile ice cream plant, concrete fdns. and floors, to Dahlman Constr. Co., 4200 N. Palmer St., Zone 12. Bids 10/17. CD 10/4.

Wis., Wausau—WAREHOUSE, etc.—Wisconsin Auto Supply Co., 131 Clinton St., 1 and 2 story, part bsmnt., 140x180 ft. steel, brick, blocks warehouse, office, store, concrete fdns. and floors, to Permanent Constr. Co., 4100 N. 3 St., Milwaukee, Zone 12. M. E. Belongia, 611 N. Broadway, Milwaukee, Zone 3, archt.

UNCLASSIFIED

BIDS ASKED

November 15

North Carolina — RURAL DISTRIBUTION LINES—Roanoke Electric Membership Corp., Rich Square, 82 mi. rural distr. lines, Northampton, Hertford, Gates, Bertie and Halifax Counties. Plans deposit $10. B. O. Vannort Engineers, Inc., 218 W. 2 St., Charlotte, engrs. CD 8/25.

November 16

Oklahoma—RURAL DISTRIBUTION LINES—Northwestern Electric Co-operative, c/o H. G. Crocker, mgr., Woodward, 287.5 mi. rural distr. lines, Woodward Co. $260,000. C. H. Guernsey & Co., 1414 N. Robinson St., engrs. CD 4/10/47.

Ont., Hamilton—HARBOR IMPRVS.—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, harbor imprvs., (Lasalle Park Wharf exten.). Approx. $250,000. R. Blais, c/o owner, engr. CD 8/2.

Bids Asked

Kan., Atchison—DRIVE-IN THEATRE—Harold Lux, H. Martin, Jr., and C. H. Potter, 1102 E. 27 St., Kansas City, Mo., drive-in theatre, $50,000.

Kan., Rosedale — DRIVE-IN THEATRE — Harold Lux, C. H. Porter, Arthur Burk & Paul Gautzolis, 1102 E. 27 St., Kansas City, Mo., drive-in theatre, $100,000.

SOON LETS CONTRACT

South Dakota — RURAL DISTRIBUTION LINES—H-D Electric Co-operative, Clear Lake, soon lets contract 33 mi. rural distr. lines on 55 ft. Class E poles and 1/0 ACSR conductor. $60,000. Scott Eng. Co., Watertown, engr. CD 3/18.

LOW BIDDERS

Md., Baltimore—CONDUIT—City, City Hall, Contr. 7, approx. 6,064 lin. ft. trench excav., aprorx. 15 manholes, approx. 6,070 lin. ft. conduit encased in concrete envelope, from Ligon & Ligon, Inc, 3310 Ridgewood Ave., **$71,577.** CD 10/19.

Md., Baltimore—STEAM SYSTEM—Dpt. P. Imprvts., 200 W. Franklin St., steam distr. sys., Mt. Wilson State Hospital, Mt. Wilson, from Chas. T. King Co., Inc., 1017 Cathedral St., **$145,990.** Turplin, Wachter & Assoc., 1004 N. Charles St., engrs.

†N.M., Los Alamos—TUNNEL, etc.—U. S. Atomic Energy Comn., Los Alamos, Tunnel and Access Road Proj. TA-33 from Jack Adams, Santa Fe, No. 3 only. **$60,621.** CD 10/28.

North Dakota — RURAL DISTRIBUTION LINES—Slope Electric Co-operative, New England, Oct. 18, 563 mi. rural distr. lines, Adams, Bowman, Hettinger and Slope Counties from Lines Builders, Billings, Mont. **$537,437.** CD 10/6.

CONTRACTS AWARDED

Ga., Moultrie — DRIVE-IN THEATRE — Moultrie Theaters, Inc., c/o C. H. Pouwell, drive-in theater. Owner builds, **$75,000.**

Ill., Carmi—DRIVE-IN THEATRE—H. W. Newcomb, et al, Carmi, 500-car drive-in theatre, incl. screen tower, projection booth, concession stands, ramps, walks, drives, lighting drainage, in-a-car speakers, etc., between Carmi and Cronsville, separate contracts. Approx. **$60,000.** CD 9/22.

Iowa — RURAL DISTRIBUTION LINES — Wright County Rural Electric Co-operative, George E. Kintim, mgr., Clarion, 50.22 mi. rural distr. lines, Wright Co., to Hoak Constr. Co., 631 63 St., Des Moines, **$61,312.** Bids 10/19. CD 4/25.

Kansas—RURAL DISTRIBUTION LINES—Sumner-Cowley Electric Co-operative Assn., Inc., Robert Anderson, mgr., 122 East Lincoln, Wellington, 254.72 mi. rural distr. lines and conversion 20.5 mi. Sumner and Cowley Counties, to Walco Eng. & Constr. Co., 2408 E. 54 Place, Tulsa 4, Okla., **$90,963.** Bids 10/6. CD 10/4.

Ont., Midland—STREET LIGHTING—Municipality, Midland, Main St. street lighting; street lighting change over; temporary substation and new 3,000 kva. substation, own forces, **$85,000.** A. C. Northover, Town Hall, town engr.

Proposal Advertisements see pp. 120 & 121

OFFICIAL PROPOSALS

Bids: November 28, 1949 (423)

Miscellaneous Construction

THE DELAWARE RIVER JOINT COMMISSION
BRIDGE PLAZA
Camden, N. J.

Sealed bids will be received at the office of the Secretary of The Delaware River Joint Commission, Administration Building, Bridge Plaza, Camden, New Jersey, until 1:30 P. M. (Eastern Standard Time), Monday, November 28, 1949 and then and there will be publicly opened and read embracing the contracts described below.

A more complete description of the work and full information for bidders are given in the contract documents and specifications which may be obtained upon a deposit of $10.00 (for each contract) which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified or cashier's check payable to The Delaware River Joint Commission and drawn upon a national or state bank or trust company having an office either in Philadelphia, Pennsylvania or Camden, New Jersey and surety's consent must be shown on Contracts 6, 8 and 9. The bidder to whom Contract 6, 8 or 9 is awarded will be required to furnish a performance and labor and materialmen's bond in the sum of 100 percent.

Contract No. 6—"Structural Materials for Reconstruction of Existing Expansion Dams on the Philadelphia and Camden Approaches"
Check to accompany bid on Contract No. 6—*$3,000.*

Contract No. 8—"New Traffic Lane Signal System and Miscellaneous Electrical Work"
Check to accompany bid on Contract No. 8—*$20,000.*

Contract No. 9—"New Traffic Lane Marker Structures"
Check to accompany bid on Contract No. 9—*$10,000.*

"Furnishing Pipe, Fittings, Specialties and Sundries for Dry Standpipes"
Check to accompany this bid—*$250.*

The Commission will afford prospective bidders an opportunity to inspect the work to be done.

The right is reserved to reject any or all bids.

THE DELAWARE RIVER JOINT COMMISSION
JOSEPH K. COSTELLO,
SECRETARY.

Bids: November 24, 1949 (428)

Utility Services for Fire Pumping Station

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-97

Sealed proposals for utility services, paving, drainage and landscaping for the Fire Pumping Station at New York International Airport, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P. M. Friday, November 25, 1949, and thereafter in the Auditorium of the Authority at the same address until 2:30 P. M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen on November 14, 1949 at the office of the Chief Engineer, and copies will be furnished after that date upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, November 10, 1949

Bids: November 23, 1949 (427)

Palisades Interstate Parkway

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

PALISADES INTERSTATE PARKWAY, N. J. SEC. 2B

Construction of Palisades Interstate Parkway, New Jersey Section 2B, from Palisades Avenue northerly, 1.2 miles, Bergen County. Length 1.264 miles.
Estimated:
7,400 s.y. 5" Macadam Base Course
30,400 s.y. 6" Macadam Base Course
30,400 s.y. 3" Mod. Pen. Mac. Intermediate Course
5,690 tons Pavement Type FABC

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Wednesday, November 23, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2819) will be received by Bureau of Reclamation, Denver, Colorado, November 29, 1949, and then publicly opened for furnishing one 120-inch butterfly valve, including one upstream flange for turbine-inlet pipe for Hoover Power Plant, Boulder Canyon Project, Arizona-California-Nevada. Delivery is desired within 400 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(424)

(Continued on page 121)

OFFICIAL PROPOSALS

Bids: November 4, 1949 (414)

Field Lighting

NOTICE TO BIDDERS

Binghamton, New York
October 20, 1949

PROJECT: FIELD LIGHTING
BROOME COUNTY AIRPORT
BROOME COUNTY,
NEW YORK

1. SEALED BIDS, in duplicate, subject to the conditions contained herein will be received until 11:00 A.M., Eastern Standard Time, Monday, November 14, 1949, at the office of the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, N. Y., and then publicly opened and read, for furnishing all labor and materials and performing all work for the above-described project in accordance with the plans and specifications.

2. Copies of the plans and specifications may be obtained from the Clerk of the Board of Supervisors, Broome County Office Building, Binghamton, New York, upon payment of a charge of $15.00 for each set requested. Check and money orders should be made payable to the order of the County Treasurer, Broome County, New York.

3. Plans and specifications will be available for inspection at the offices of:

S. P. Carman
Security Mutual Building
Binghamton, New York
and
Seelye, Stevenson & Value
101 Park Avenue
New York 17, N. Y.

4. Certified check or bid bond for a sum of not less than 5% of the bid price will be required for each bid, payable to the order of the County Treasurer, Broome County.

5. Payment and performance bonds in the amount of 100% of the contract sum will be required.

6. The right is reserved, as the interest of the Owner may require, to reject any and all bids, to waive any informality in bids received, and to accept or reject any items of any bid.

7. Envelopes containing bids must be sealed and marked as follows:

Bid for Field Lighting for Broome County Airport, to be opened at 11:00 A.M., Eastern Standard Time, November 14, 1949.

8. The right is reserved, as the interest of the Owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.

HOWARD DAVIS
Clerk of the Board of Supervisors
Broome County, New York

Bids: December 9, 1949 (422)

Sewage Treatment Plant

Waterbury, Connecticut

Sealed proposals for the construction of 15 M.G.D. sewage treatment plant will be received by the Board of Public Works of the City of Waterbury, at its office in the City Hall until 8:00 o'clock P. M., Eastern Standard Time, Friday, December 9, 1949, at which time they will be publicly opened and read.

The work to be done consists of the construction of a screen and grit chamber with superstructure and attached garage, a pump and service building, three primary settling tanks, a sludge filter building, sludge storage tanks with superstructure, a chlorine building and attached service garage, and furnishing and installing miscellaneous connections, piping, equipment and electrical work.

Plans, contract, and specifications may be obtained after November 8, 1949 by intending bidders applying at the office of the Bureau of Engineering, City Hall, Waterbury, Connecticut or at the office of Malcolm Pirnie Engineers, 25 West 43rd Street, New York, N. Y., on deposit of twenty-five dollars ($25.00), which sum will be refunded upon return of plans and specifications in good condition within ten (10) days after award of contract.

OFFICE OF BUREAU OF ENGINEERING
WATERBURY, CONNECTICUT

Henry C. Whitlock,
City Engineer

OFFICIAL PROPOSALS

Bids: November 22, 1949 (426)

State Road Work

NOTICE TO CONTRACTOR'S: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of (1) The Highway Law and Special provisions therein for projects financed with federal aid funds (2) Canal Law, (3) The Public Buildings Law, sealed proposals will be received until ten-thirty o'clock A.M., Eastern Standard Time on Tuesday, November 22, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

HIGHWAY, CANAL & FLOOD CONTROL PROJECTS

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany	FGRC 49-126	Gr. Sep. of the N. Y. C. R. R. with New Scotland-Wolf Hill, S. H. 366 Proj. FG 392(8)	0.44	9" Cem. Conc. Pavt. 24' Wide 1-RR Sep. Beam Br. 64½'	$20,000 Plans $5	$362,000.00
Warren	FARC 49-125	Warrensburg-Chestertown, Pt. 1, S. H. 5157 Proj. F1 490(6)	0.97	8" Cem. Conc. Pavt. 24'-40' Wide = 0.91 mi. Misc. Work = 0.02 Mi.	$14,000 Plans $5	$240,000.00
		DISTRICT No. 2				
		L. Ketchum, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Fulton Herkimer, Montgomery, Oneida	RC 49-122	Br. No. 1, S. H. 362; Br. No. 1, S. H. 1817; Br. No. 1, S. H. 461; Br. No. 2, S. H. 869; Br. No. 1, S. H. 5550; Br. No. 1, S. H. 1866B; Br. No. 1, S. H. 562; Br. over Mohawk River, S. H. 5547	....	Painting 8 Bridges	$1,100 Plans $5	$20,000.00
Madison		Buck Street Bridge Over Old Erie Canal, Canastota Village	0.05	R. O. B. Gravel Found. Reinf. Conc. Slab 24'	$1,700 Plans $5	$31,000.00
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., 301 E. Water St., Syracuse, N. Y.				
Onondaga		West Seneca Turnpike Bridge and Dorwin Avenue Bridge, Syracuse Flood Control	0.35	Asph. Conc. Opt. =0.20 Mi. Asph. Conc. Type 2A on Cem. Con. Fdt. = 0.15 Mi. I-Beam 2 Sp. 40' ea. 2 Alpha I-Beams 62' & 77' 8" Alpha = $172.06	5% of Bid Plans $10	$327,172.80
		DISTRICT No. 5				
		C. R. Waters, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Cattaraugus	RC 49-124	Hinsdale-Franklinville, S. H. 5544	0.13	Asph. Conc. Opt. =0.12 Mi. Misc. Work. =0.01 Mi. Raising 24' Span Conc. Deck. Br.	$1,500 Plans $5	$26,000.00
Erie	FAC NT 49-1	City of Buffalo: Niagara Thruway (Court St. to Porter Ave.) Proj. U 865(5)	1.05	Asph. Conc. Type 2A-1.03 Mi. Misc. Work = 0.02 Mi.	$30,000 Plans $5	$511,000.00
Erie	FGC 49-11	Gr. Sep. of the N. Y. C. R. R. Erie R. R., and D. L. & W. R. R. With City of Buffalo: Delaware Avenue Proj. UG 1078(1)	0.26	Asph. Conc. Ty. 2A on 8" Cem. Conc. Found.: 2 R. R. Sep. Plate Girders 95' ea. 1 R. R. Sep. Plate Girder 2 Sp. 95' ea.	$65,000 Plans $10	$1,216,000.00
		DISTRICT No. 6				
		H. F. Brumm, Dist. Engr., 30 W. Main St., Hornell, N. Y.				
Chemung	FARC C49-127 FARC 49-128	City of Elmira: Lowman Rd., FAC 46-3 Elmira-Lowman, S. H. 5207 Lowman Waverly Pt. 1, S. H. 5048 Proj. U221(4); F221(4); F339(4)	7.40	Asph. Conc. Type 1A Opt. or 9" Cem. Conc. Pavt. 2 at 24' Wide (Opt. Proposals)	$105,000 Plans $20	$1,901,000.00
Schuyler	FCRC 49-123	Montour Falls-Alpine, Pt. 1, S. H. 1232	0.58	Asp. Conc. Opt. =0.53 Mi. 9" Cem. Conc. Pavt. 30' Wd. =0.05 Mi. Alpha I-Beam 3 Span 84' ea. Alpha = $237.30	$28,000 Plans $5	$477,000.00
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little Neck Rd., Babyou. L. I., N. Y.				
Bronx	FA CBE 49-5	Cross Bronx Expressway Cont. 9A Proj. U 1084(15)	0.28	Grading & Sheet Asp. Pav. Footings Piers 2, 3, 4 B R. P. Viaduct F. R. Rigid Frame 2 at 47'-8" ea. R. C. Rigid Frame 2 Sp. 51'-6½" & 47'-7"	$100,000 Plans $20	$1,685,000.00

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

SEARCHLIGHT SECTION

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$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches —to a page. E.N.R.

NEW ADVERTISEMENTS received by November 14th appear in November 24th issue subject to limitation of space available.

WANTED

CIVIL ENGINEER

For position of Director of Public Works and City Engineer for New London, Connecticut. Salary $6500.00. Required Qualifications: Competent Professional Engineer and Land Surveyor. State License, five years experience as Civil Engineer and Land Surveyor. Experience with Municipal Engineering Problems preferred. *Apply for application form to*

City Manager, Municipal Building, New London, Connecticut

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

CIVIL ENGINEER: About 24 with 5 years experience. Small specialized office with national coverage since 1923. Exceptional opportunity for energetic go-getter. Wesley Bintz, 301 S. Washington Avenue, Lansing 25, Michigan.

REINFORCED CONCRETE Designers and Detailers. Excellent opportunity for ambitious young men. Bar company or designing engineering experience essential. Send full details first letter to the Hausman Steel Company, P. O. Box 416, Toledo 1, Ohio.

WANTED—AN experienced estimator for an established Philadelphia concern for large sewers, tunnels and bridges. State salary, experience, and when available. P-1309, Engineering News-Record.

ESTIMATOR WANTED by large General Contracting Firm located in Central Illinois. Applicant to be under 40 years of age, experienced in estimating all types of General Building Construction. If interested, advise age, education, experience and salary desired. P-1296, Engineering News-Record.

SANITARY ENGINEER. (a) Sanitary Engineer, graduate, with 10 to 15 years experience in water distribution and sewerage systems, waterworks and sewage treatment plants, dams, reservoirs, etc., for old established consulting engineering firm doing business in East and South. Must have some construction experience, thorough knowledge of sanitary design and be capable of assuming full responsibility of directing drafting room work and command full respect of subordinates. Permanent and fine opportunity. Salary based on ability. Position open immediately. Location, Pennsylvania. (b) Assistant Sanitary Engineer, graduate, with 3 to 5 years experience on work same as above, but with lesser degree of responsibility. Must have good grounding in sanitary design and capable of directing work of small squad of draftsmen and/or junior engineers. Opportunity, location and salary same as above. P-1262, Engineering News-Record.

ESTIMATOR-QUALIFIED to estimate plumbing, heating and power plant jobs running into several million dollars. Prefer mechanical engineering graduate with field experience. Permanent position for the right man with salary and bonus commensurate with qualifications and results. Submit experience record and educational background for review and if interesting to us, personal interview at our expense will be arranged. Reply immediately to Virginia Engineering Co., Inc., Newport News, Virginia, Attention: A. M. Miller.

WANTED

THREE OUTSTANDING MEN

to plan and supervise the work of design engineers on a $38,000,000 Water System Expansion Program; one registered in Civil, one in Mechanical and one in Architectural Engineering. Salary $6430 to $7147 per year. If you have a proven record of success in design and construction of major water pumping and filtration plants, we would welcome your application.

Supervisory Assistants ($5580 to $6297 per year) and Project Engineers, ($4809 to $5287 per year) in Architectural, Civil, Sanitary, Electrical, Mechanical and Structural Engineering will also be needed.

For information, write immediately to

DETROIT CIVIL SERVICE COMMISSION

15th Floor, Water Board Building Detroit 26, Michigan

POSITIONS VACANT

MECHANICAL SUPERINTENDENT — Qualified to supervise installation of plumbing, heating and power plant jobs running over one million dollars, also mechanical equipment and piping installations in Sewage disposal and water treatment plants. Mechanical engineering graduate with some office experience in estimating preferable, but not essential. Permanent position for properly qualified man with salary and bonus in line with qualifications and results, submit experience record and educational background for review and if interesting to us, personal interview at our expense wil lbe arranged. Reply immediately to Virginia Engineering Co., Inc., Newport News, Virginia, Attention: A. M. Miller.

UNUSUAL OPPORTUNITY—Young civil engineer, five to ten years building construction experience, needed as Field Engineer, Estimator, and general Assistant to Construction Superintendents and Project Managers with growing construction company. Headquarters Providence, R. I., some travel. Must be interested, energetic, willing to learn, and able to organize and run a growing engineering section. Write in confidence giving age, education, experience, references and when available. P-1332, Engineering News-Record.

FOREMAN—HEAVY Earth Moving Equipment Venezuela. Single status. Broad earth experience necessary. Write full details Box 2819, Dallas, Texas.

EXPERIENCED DESIGNERS, Detailers Steel and concrete bridges or concrete buildings in New York City. Send resume P-1359, Engineering News-Record.

EMPLOYMENT SERVICES

SALARIED PERSONNEL, $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

(Continued on page 123)

Chief Civil Engineer WANTED

An excellent opportunity in an established west coast engineering firm for an exceptionally well qualified Graduate Civil Engineer, capable of taking charge of a Civil Department. Must possess comprehensive design experience and thorough knowledge of grading, drainage, roads, railroads, and utility layouts for municipalities.

In addition, applicant must have ability to discuss and develop prospective work with municipal, county and state authorities.

Submit photo with experience record covering above requirements in detail. Replies confidential.

P-1251, Engineering News-Record
621 S. Hope Street, Los Angeles, Calif.

STRUCTURAL DRAFTSMEN:

Needed Several First Class experienced detailers and checkers. Only those with previous structural fabricating shop experience need apply. Give complete information to Personnel Dept.

Consolidated Western Steel Corp.
Orange, Texas

STRUCTURAL STEEL ESTIMATOR

Well known New England fabricating company has an exceptional opening for young experienced structural steel estimator. A real opportunity exists for a man with estimating and sales ability. Give in detail experience, education, etc. References will be required. Replies held strictly confidential.

P-1277, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1078, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (39 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

EMPLOYMENT SERVICES
(Continued from page 122)

EXPERIENCED STRUCTURAL Office Engineer for Architect-Engineer. Any age. Commercial, industrial, public and churches. Submit professional brief. A-1 Employment Service, 1002 American Bank Bldg., New Orleans, La.

EXPERIENCED OFFICE Mechanical-Electrical Engineer for Architect-Engineer. Age open. Commercial, Industrial, Institutional Plants. Submit professional brief. A-1 Employment Service, 1002 American Bank Bldg., New Orleans, La.

POSITIONS WANTED

GENERAL SUPERINTENDENT — 50 — real asset as key man in live organization. Thoroughly competent building man, much heavy experience. Spent years as construction Superintendent before moving up and considered one of the best. Excellent brochure and references. Address PW-1184, Engineering News-Record.

BUILDING CONSTRUCTION: Thirty years experience covering estimating, office management and general supervision all types of buildings. PW-1204, Engineering News-Record.

CONSTRUCTION SUPT., Project Manager, 22 years proven construction record: hospitals, schools, industrials, large housing projects; experienced preparing bids. Highest references. Will travel. PW-1308, Engineering News-Record.

MECHANICAL ENGINEER: 8 years chemical plant design and process engineering, 10 years diversified, maintenance, machine design and supervisory experience. PW-1311, Engineering News-Record.

CONSTRUCTION PROBLEMS — difficulties, unusual conditions, analyzed solved, dams, tunnels, concrete structures, methods, estimates, quick action. PW-1334, Engineering News-Record.

OFFICE MANAGER—Cost Accountant, with 13 years construction and maintenance background, including 6 years foreign. Capable supervision all personnel, payroll, and administrative functions. Married, age 33. Available January 1. PW-1339, Engineering News-Record.

CIVIL ENGINEER, 12 years experience administrative and design. Specialized in general construction and airport design and field work. Desires contacts for airport design work. Specialty work considered on quotation basis. Work history furnished upon request. PW-1340, Engineering News-Record.

SALES EXECUTIVE: Reliable Phila. Business man 50. Now employed regional manager national company. Broad sales, management, and contact experience. Bonded, highest references. Excellent business and political connections Penna., New York, and New Jersey. Interested in permanent profitable connection only with well established company. PW-1338, Engineering News-Record.

DRAFTSMAN 6 years experience mechanical, piping, structural, in chemical and sewage treatment plants desires position N. Y. C. PW-1347, Engineering News-Record.

DRAFTSMAN 22 yrs., 3 yrs. of varied experience, good education, fine references, ambitions, wishes position with future. PW-1352, Engineering News-Record.

STRUCT. ENGINEER 23 years experience design, details, supervision, estimating, field, checking, rigid frame analysis, top qualifications. PW-1354, Engineering News-Record.

PART TIME WORK WANTED

PROFESSIONAL ENGINEER, N. Y. State license offers free lancing work in steel and concrete structural design, steel detailing-alterations—Gerard Witt, 132 Nassau St., N. Y. 7, N. Y., Worth 4-1163.

PATENT ATTORNEY

Patent Practice

before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N.W., Washington 5, D. C.

WANTED

Large engineering firm wishes to acquire several complete plants through purchase of (1) capital stock, (2) assets, (3) machinery and equipment, whole or in part. Personnel retained where possible, strictest confidence.

Box 1206
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OUR COURSES HAVE HELPED THOUSANDS
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"An Army Marches on Its Stomach"
We Have Fed Millions
KANE INDUSTRIAL SERVICE
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SEATTLE: 316 Second Ave., South
MINNEAPOLIS: 105 Nicollet Ph: Atl 4845.

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4 REAL BARGAINS - For Quick Sale
2—25 Ton Cap LOCOMOTIVE STEAM CRANES
1—20 Ton Cap LOCOMOTIVE STEAM CRANE
(Above have 50' booms)
Good operating condition, boilers like new, one crane equipped with generator for magnet, can be seen at our plant.
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1—7 Ton Cap GASOLINE MOTOR, 4-WHEEL RAIL TYPE CRANE
(Equipped with generator and 36" magnet)
Excellent operating condition, can be seen in operation at our plant.
Wire or phone for prices and further details
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Phone LA-2197

HIGHWAY EARTH AUGER
Mounted on
Caterpillar D2
369 hours—NEW in MAY '49
For Sale or Rent
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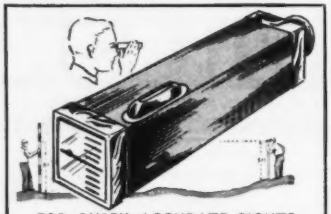

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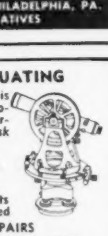

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Lorain TL-20 self-propelled, 45' crane boom.

SHOVEL ATTACHMENT

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS #5877, new ¾-yd dipper LBS#7750.
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Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.

BACKHOE ATTACHMENT

Backhoe attachment for Lorain or Northwest 1¼-yd machine

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¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
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McCaffrey Model 648 for 1¼ to 2-yd crane.
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Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver 2-stage 160 ft., skid Mtd.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels, Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
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Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

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20" x 6'6" Belt Type Magnetic Separator.
3018 Cedarapids roller bearing roll crusher, new condition, new warranty, used as demonstrator only.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
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Sterling COE Model 255GCS tandem drive tractor, 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50 x20 tires, airbrakes, outriggers, excellent condition.
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830'—Truscon 7"x8" forms, with stakes.
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42"	5	1/8" — 1/16"	20"	5	1/8" — 1/32"
36"	6	1/8" — 1/16"	20"	4	1/8" — 1/32"
30"	6	1/8" — 1/16"	18"	4	1/8" — 1/32"
30"	5	1/8" — 1/16"	16"	4	1/8" — 1/32"
26"	5	1/8" — 1/32"	14"	4	1/16" — 1/32"
24"	5	1/8" — 1/32"	12"	4	1/16" — 1/32"

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HEAVY-DUTY FRICTION SURFACE

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	16"	6	10"	5	5"	5
	14"	6	8"	6	4"	5
	12"	6	8"	5	4"	4
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1"	25 "	6.25		50 "	15.00
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All sizes 8" x 30" to 42" x 134".

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All sizes 4 x 6 to 48 x 60".

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1—50 ton American Model 20-100 all steel guy derrick, Ser. No. 1184, with 115' mast, 100' boom, 18' bullwheel. Capacity 50 tons at 38' and 20 tons at 98' radius.

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Portable and stationary, electric, diesel & gasoline power, sizes from 20 cu. ft., 1,000 cu. ft.

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1—15 ton Link Belt #678, ASME boiler, cast steel trucks. BARGAIN.

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½ yd. Universal Crane #873, with 25' boom, mtd. on 10 wheel Hendrickson pneu. tired truck.

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1—15 ton Vulcan std. ga. locomotive, Ser. 3963. With special MCB couplings. Powered by 6 cyl. LeRoi Mdl. JMS gasoline engine. Equipped with 4-wheel air operated brakes with 2 cyl. Westinghouse air compressor. Complete with starter and generator.

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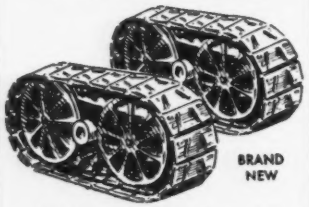

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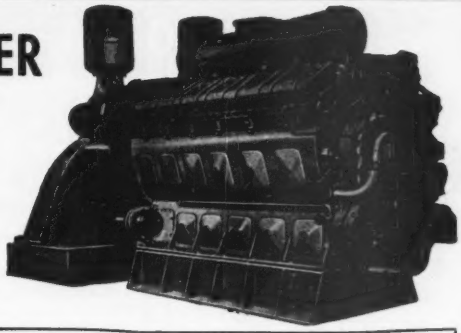

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$42,500.00

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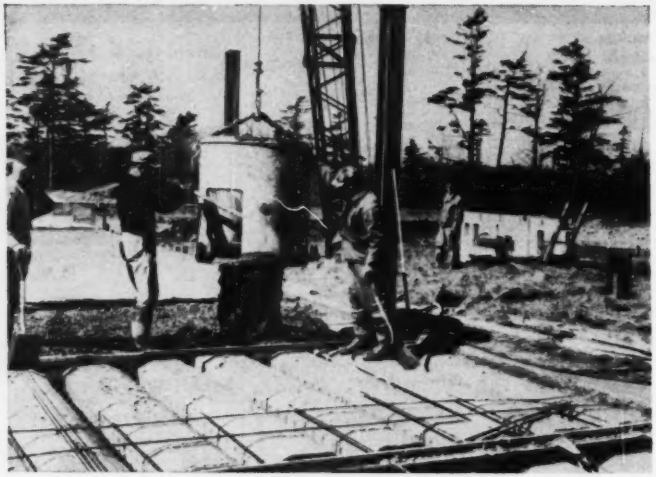


Soffit Blocks for Concrete Floor and Roof Construction

Durisol soffit blocks provide the integral forms for reinforced concrete joists and slabs and become a part of the floor or ceiling. In addition, they provide thermal and sound insulation and acoustical control. The blocks measure 24x48 in. and are available in dimensions of 7½, 9½, and 11½ in. to form 6, 8, and 10-in. joists. Advantages include: Can be laid on minimum framework, thus require less shoring lumber and lumber of smaller dimensions; their large size and light weight permit fast installation; require less concrete to attain a comparable strength; and they provide an excellent plaster base. Durisol is a lightweight concrete material combining chemically mineralized wood shavings and portland cement. This aggregate is then molded into an incombustible construction material. — Durisol, Inc., 420 Lexington Ave., New York 17, N. Y.

Sinker Weighs 45 Pounds

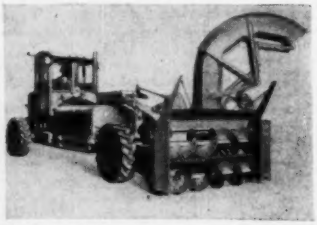
Sinker, in the 45-lb. class, can be used for wet or dry drilling or automatic air-operated water control by changing the easily removed gland and tube. This conversion is made without taking the drill apart, and without changing the backhead. The S-48 is said to have superior drilling, rotating, and hole-cleaning characteristics and to be especially suitable for use with tungsten-carbide rock bits. — Gardner-Denver Co., Quincy, Ill.

Transfer Name Plates

Name plates, made of paper-thin aluminum foil, are available for applying company names, trademarks, or other identifying insignia to construction equipment. The Metal-Cals are easily applied by means of a special adhesive installed at the factory, in such a manner that they cannot be rubbed or scratched out.—C & H Supply Co., 2025 N. W. Overton, Portland, Ore.

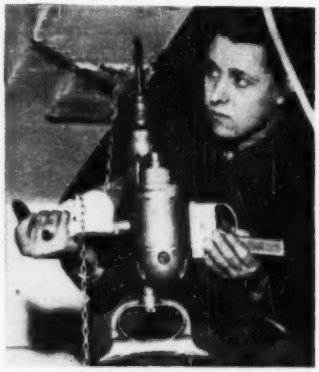
Diesel Rated at 110-Hp.

Lightweight, compact, 4-cylinder diesel engine is rated at 110-hp. at 1,800 rpm. The HR-400 is available in five industrial models, one automotive model, and one marine model. Mounting dimensions for the basic industrial model are 43$\frac{5}{32}$ x 29$\frac{3}{8}$ x 47$\frac{3}{4}$ in. The HR-400 is equipped with standard two-valve heads, a new increased-flow lubricating system, continuous groove main bearings, standard HR liners and head gaskets, and the exclusive Cummins fuel system. —Cummins Engine Co., Inc., Columbus, Ind.



Rotary Snow Plow

Sole distributorship of the Sicard line of Snow Master rotary plows has been granted to Austin-Western. Features of the Snow Master include complete control of casting in a 220-deg. arc at distances from 3 to 150 ft.; blower housing and wrist-action chute enable casting to exact spot desired; casting or loading can be carried on at full speed. Four-wheel drive of the A-W grader furnish high traction under all conditions.—Austin-Western Co., Aurora, Ill.



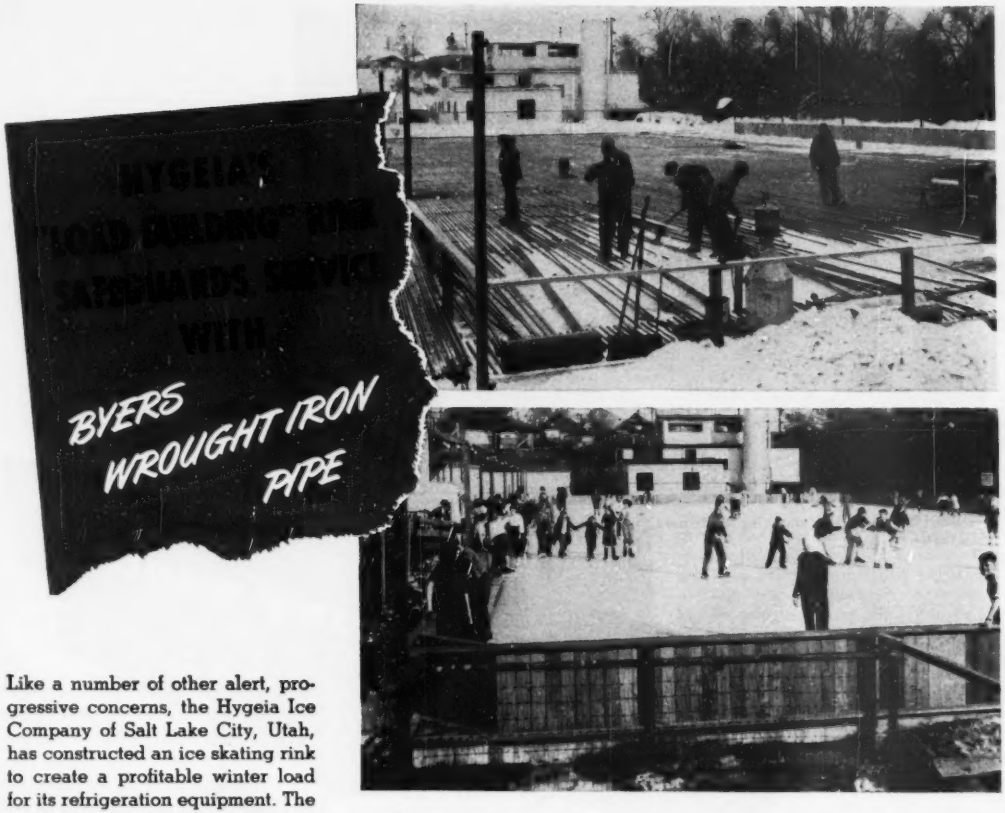
Pressure Handle for Drills

Permits drilling in any position including directly overhead. The pressure handle attaches to any standard portable electric or pneumatic drill. Operator controls drilling pressure of the tool by turning the handle. One end of the feed chain is fastened to the work, the other is placed over the chain sprocket on the handle.—Pressure Handle Co., North State St., Wilkes-Barre, Pa.

Joint Caulker in Pig Form

Hydro-Tite self-caulking joint compound is now available in sheets of twelve pigs weighing two pounds each. The pigs are easily separated and are designed to eliminate waste and to save time in handling. They are packed

(Continued on page 139)



Like a number of other alert, progressive concerns, the Hygeia Ice Company of Salt Lake City, Utah, has constructed an ice skating rink to create a profitable winter load for its refrigeration equipment. The rink is 85-feet by 196-feet, and is the first of its kind in the intermountain area. Rightly recognizing that long-term profits would depend on long-lived materials, the company used wrought iron for the coils. Over 60,000 feet of Byers 1-inch wrought iron pipe was installed.

The wisdom of using wrought iron coils in skating rinks has been decisively confirmed by the experiences of dozens of users. Because of the severe conditions, any pipe that is not inherently corrosion-resistant is doomed to early failure. In a number of recorded instances, difficulties have started in as little as three years, with complete replacements necessary in from 7 to 11 years. In contrast to this is the record of wrought iron pipe—26 years of service in one large rink, with 95% of the pipe re-used when the rink was rebuilt . . . 12 years of service to date of last report in another, without a single leak . . . and still other cases where wrought iron was used for replacement, and has already outlasted the original material several times over.

It is no accident that wrought iron serves so well in this installation; its unusual character equips it to withstand the severe corrosive conditions. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and disperse corrosive attack, and thus discourage pitting. The fibers also anchor the initial protective scale, which shields the underlying metal.

If you are considering construction of a skating rink, you will find some interesting information in our bulletin, *Wrought Iron in Refrigeration, Ice Skating Rinks, and Air Conditioning Systems.* More detailed information on user experience, and on rink costs, can be obtained by communicating with the nearest District Office.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington; Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

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G-200R Wagon Drills, mounting 4" drifters, run 24-foot blast holes

fast drilling at any angle

The flexible mounting of the versatile G-200R Wagon Drill adapts it for drilling vertically, horizontally, or at any desired angle — line drilling, toe-hole drilling or bench drilling. The sliding cone, with a 36-inch adjustment, offsets ground irregularities or uneven steel lengths.

The G-200R provides fast and easy operation of the more powerful CP drifter drills — with great reduction in drilling costs. Its CP rotary air motor gives a steady feed and quick return, with plenty of power for pulling tight steel.

The wheels can be quickly turned at right angles (tandem) to facilitate line drilling or drilling close to ledge or wall.

Available with CP-50N (3"), CP-60N (3½"), or CP-70 (4") drifters.

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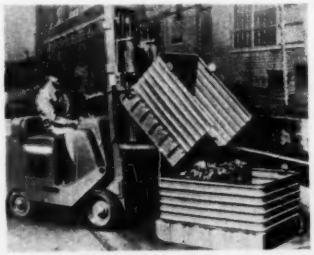
two sheets to a 50 lb. carton. The Hydro-Tite compound is still available in 100-lb. waterproof bags for those who prefer the powder form. An improved germicide is said to protect all Hydro-Tite installations against hazardous soil conditions.—Hydraulic Development Corp., West Medford Station, Boston 56, Mass.



Skip Box Dumping Device

Double-acting hydraulic cylinder tilts three-sided box allowing load to drop from open end. The box has metal rings at the back which are engaged by special hooks on the lift truck carriage when the box is lifted by the forks. Tilting is brought about mechanically by raising the hooks. Two sets of vertical coil springs, compressed by the dumping action, assist in returning box to horizontal position. Device will handle loads up to 4,000 lb.—Towmotor Corp., 1226 E. 152nd St., Cleveland 10, Ohio.

Paint for Asphalt Shingles

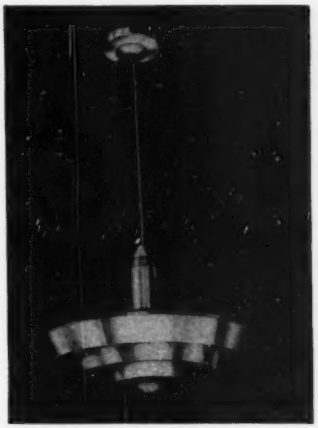
Waterproof finish for painting and weatherproofing asphalt side wall and roof shingles is being marketed under the Asphalt-Seal trade name. Developed especially to restore and beautify insulated brick siding, it stops bleeding and crumbling by sealing the pores of the surface. It leaves a colorful waterproof finish. Available in 1 and 5-gal. cans in three light and four dark colors.—Dewatex Mfg. Corp., W. 42nd St. and Dyer Ave., New York 18, N. Y.

Liquid Snow-Plow Wax

Produces a hard, slick surface off which snow slides easily. Prevents piling up of snow thus reducing breakdowns from overloading and increasing plow speed. Snow-Rem has a high Carnauba wax content and may be applied by brush or spray gun. Dries within 20 min. One gallon of wax covers 250 sq. ft. by brushing, or 300 by spraying.—Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Casing for Shaft Coupling

Lightweight revolving coupling is split axially to permit installation or removal in a space no longer than the coupling itself. Design of the casing and grease-retaining seals allow complete flexibility of the coupling. The Type A casing employs a pliable lubrication seal at each hub end. The casing is driven by special interlocking feature built into the seals which engage with the coupling chain. Type C employs a lubrication seal on one end only, with the other end sealed by the clamp fit of the casing halves on the finish-ground hub of one of the coupling sprockets. These casings are driven through the clamp fit between the casing and one coupling sprocket.—Diamond Chain Co., Inc., 402 Kentucky Ave., Indianapolis 7, Ind.

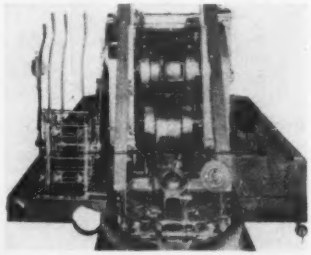


Indirect Lighting Fixture

A lighting fixture for use with silver-bowl lamps features modern design. The Indirect Luminaire has emery-grain-finished spun-aluminum louvres permanently protected by the Alzak aluminum process. The Seelux reflectors provide indirect illumination and feature a minimum of maintenance. The silver-bowl lamps contain the major reflector and fixture which can be restored to initial efficiency merely by a lamp change. Open louvres are said to eliminate critical maintenance problems involved with indirect lighting fixtures.—The Edwin F. Guth Co., 2615 Washington Ave., St. Louis 3, Mo.

Mobile Radio Equipment

Portable 25-50 mc mobile radio communication equipment meets all new FCC regulations. It is available for 20 or 40 kc channel widths, the narrow-band units making 40-kc adjacent channel operation practical in the same service area. Tests of the equipment indicate that skip interference from stations on frequencies 20 kc removed is entirely eliminated, without loss of ground wave communication range. The complete line includes a 50-watt and 250-watt station combination, 30-watt and 50-watt mobile units, remote control consoles, antenna equipment, and accessory items. — General Electric Co., Transmitter Division, Electronics Park, Syracuse, N. Y.



Dipper Tripper; Tagline Winder

Combination power dipper trip and automatic tagline winder is available for new or old "Quick-Way" truck shovels and clamshells. Advantages resulting from use of this unit are: accurate loading and casting without moving boom or machine, automatic tagline pull, uniform, adjustable pull at and below machine level, instant-acting manual control to manipulate clamshell or grapple. Requires no major changes for installation. Tag-Master is made by the Morin Mfg. Co.—"Quick-Way" Truck Shovel Co., 2400 E. 40th Ave., Denver, Colo.

Motor for Deep-Well Pumps

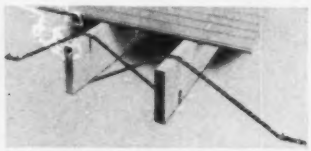
New-type CSP Life-Line motors are designed especially for use with deep-well turbine pumps. These weatherproof, vertical, hollow-shaft motors can be furnished as: complete motor, motor without base, or as a stator and rotor only. They are of the squirrel-cage induction type. Horsepower range is 1 to 20; cycles, available are 60, 50, and 25; volts, 208, 220, 440, 550; and NEMA standard frames from 225 to 326.—Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa.

Finishing Cement

Suitable for either indoor or outdoor application, new-type finishing cement can be applied over thermal insulating block or plastic insulating cements. The Powerhouse finishing cement is a dry, loose material of mineral wool-fiber base, with a thermal efficiency approaching that of insulating cements. It has a low shrinkage, and resists temperatures up to 1,700-deg. F. Features include: develops a strong, resilient surface; can be stored indefinitely; can be readily applied

(Continued on next page)

under adverse weather conditions; and is easily maintained in service. It is adaptable to irregular or large flat surfaces in thin or thick layers, and is applied with two or three passes of the trowel.—Baldwin-Hill Co., 500 Breunig Ave., Trenton 2, N. J.



Bridging for Wood Joists

Ready for use without cutting or fitting, Tru-Tye steel bridging is sold in one stock size for wood joists of any standard depth installed on 16-in. centers. Easily installed, only two nails are required for each bridge. Tru-Tyes hold the joists in tension and permanently reinforce the building framework. Strength of the bridging in tension is 2,000 lb.—Dravo Corp., National Department, 1203 Dravo Bldg., Pittsburgh 22, Pa.

Asphalt Viscosity Meter

High-consistency rotational viscometer measures the viscosity of asphalt and related viscous substances. It makes possible a complete evaluation of high consistency materials having complete flow characteristics. It will determine viscosity, degree of flow complexity, and relative elasticity. Torque resulting from viscous drag is recorded by a Brown ElectroniK recorder through a Statham strain gage. The top has provision for preheating four samples while a fifth is being tested. Overall dimensions: 66 in. high, 24 in. long, and 20 in. wide.—Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.

Compressors

Two new air compressor units are designed for direct attachment through universal joint couplings to tractor power take-offs. They have displacements of 17 and 30 c.f.m. respectively. They are intended to provide a convenient source of on-the-job compressed air wherever it may be required by contractors and other users.—Miller-Robinson Co., 7007 Avalon Boulevard, Los Angeles 3, Calif.

Manufacturers' Publications

Steam Generators—Bulletin P-1 describes the complete line of Cyclotherm boilers ranging in sizes from 10 to 300 hp. and in pressures from 15 to 200 lb. New nozzle permits interchangeable oil or gas firing without requiring a change of nozzle. It is also said to provide efficient combustion at all firing rates.—Cyclotherm Corp., Dept. 87-R, 90 Broad St., New York 4, N. Y.

Shovel Cranes—Catalog 2356 (16 pp.) describes the ¾-yd. LS-51; Catalog 2312 (16-pp.), the ¾-yd. LS-71. Bulletin 2356 features a description of the hydraulic controls made possible by the use of the exclusive Speed-o-Matic controls. Also described are the all-welded lower frame, convertibility to all front-end attachments, independent chain crowd, independent boom hoist, and other design features. Charts and drawings show dimensions, capacities, and brief specifications. Bulletin 2312 features the use of photographs and concise text to point out the features and advantages of the LS-71 as a shovel, crane, dragline, or trench hoe.—Link-Belt Speeder Corp., 307 N. Michigan Ave., Chicago 1, Ill.

Rubber Products—Three catalog sheets describe the features of construction and application of new types of rubber products. Catalog Section 9010 describes the Armorite abrasive-resistant rubber which is used to line pipes, chutes, sandblast cabinets, etc. Catalog Section 4460 describes rubber hose made from Armorite and recommended for sand discharge and placement and cement handling and grouting. Catalog Section 4200 describes a new line of welding hose including the company's oxy-acetylene and Duo-Weld hose.—The B. F. Goodrich Co., Akron, Ohio.

Safety Equipment—Catalog of personal protective equipment and industrial safety devices is entitled "Everything in Safety". It is divided into five sections—First Aid; Respiratory Protection; Eye Protection; Hats, Belts, and Clothing; and Miscellaneous Safety Equipment.—E. D. Bullard Co., 275 Eighth St., San Francisco 3, Calif.

Data on Venturi Tubes—Detailed engineering information on Venturi meter tubes is contained in Technical Bulletin 110.21-F3. Data is presented on the design of Venturi's, specifications, loss of head in passing through the tube, Venturi formulas for operation, typical calculations, selection of throat size, installation, and other data. The booklet is complete with photographs and drawings of pertinent facts in the construction, use and operation of Venturi tubes. A capacity table contains information on capacities in gpm, gal./day, appproximate laying length, and shipping weight for various inlet and throat diameters. — Builders-Providence, Inc., 9 Codding St., Providence 1, R. I.

Cone-Drive Reducers—Single-reduction Cone-Drive speed reducers are described in Bulletins No. 8962 and 8964. Bulletin No. 8962 covers speed reducers with 2½ and 3-in. center distance primaries and 4 to 7-in. center distance secondaries (up to 9 hp. and 53,700 in.-lb. output torque, Class 1); Bulletin 8964 covers units with 4, 5, and 6-in. primaries and 7 to 12-in. secondaries (up to 59 hp. and 244,600 in.-lb. output torque, Class 1). Included in the bulletins are specification tables, thermal factors, methods of determining horsepower rating, chain pull, output torque, and drawings indicating principal dimensions. Special ordering instructions are also included.—Cone-Drive Div., Michigan Tool Co., 7171 E. McNichols Road, Detroit 12, Mich.

Dryers and Kilns—Rotary dryers, kilns, and coolers in a wide range of sizes are described in a new 32-p. catalog. Equipment listed includes direct, semi-direct and indirect heat dryers; double-shell and single-shell dryers; parallel-flow and counter-flow dryers; steam tube and hot air dryers. It covers air type, water spray, and partially submerged-type rotary coolers, and counter-flow rotary kilns for calcining, roasting or oxidizing. Includes overall dimensions of all models as well as typical flow sheets showing how the various units are used in continuous flow operations.—Hardinge Co., Inc., 240 Arch St., York, Pa.

Pressure Gages—Bulletin No. G-620, on the Series 500 absolute pressure gage, describes the instrument in detail and gives data on new principle of operation. This gage makes possible accurate recording and automatic control of absolute pressure within scale ranges as low as 0 to 20 mm. of mercury, absolute.—The Bristol Co., P. O. Box 1790, Waterbury 91, Conn.

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READER COMMENT

Bidding for Engineering Work

Sir: Apropos of three editorials (ENR Jan. 9, June 26, and Sept. 4, 1947) which I have read, and possibly some others that I have not read, concerning the matter of competitive bidding for engineering services, I take strong issue with the sentiment expressed. I submit herewith an extract from the opinion of the Supreme Court of the State of California in the case of Clyde C. Kennedy, petitioner, versus Harry D. Ross, Controller of the city and county of San Francisco.

In Miller v. Boyle, supra (43 Cal. App. 39), the following was quoted with approval at page 44: "An architect is an artist. His work requires taste, skill, and technical learning and ability of a rare kind. Advertising might bring many bids, but it is beyond peradventure that the lowest bidder might be the least capable and most inexperienced, and absolutely unacceptable. As well advertise for a lawyer, a civil engineer for the city, and intrust its vast affairs and important interests to the one who would work for the least money." Without further discussion, the court in San Francisco v. Boyd, supra (17 Cal. 2d) said at page 620 that "The employment of a person who is highly and technically skilled in his science or profession is one which may properly be made without competitive bidding."

It seems to me that this extract from a decision of the California Supreme Court answers the sentiment expressed in those editorials.

An engineer is a professional man and the practice of calling for competitive bidding could be stopped if the engineering societies will do something about it.

J. C. Stevens
Consulting Engineer
Portland, Ore.

Double Swing Bridges

Sir: We note in the Oct. 13 issue of Engineering News-Record a description of the proposed double swing bridge to be built by the Virginia State Highway Commission across the York River between Gloucester Point and Yorktown. The article is captioned "Double Swing Bridge is First of Type."

It might be of interest to your readers to learn that several bridges of this design have been constructed in the United States during the past fifty years. In 1898 a double swing railroad bridge was constructed over the Cuyahoga River in Cleveland. This bridge was recently replaced with a new structure. The Pere Marquette Railroad constructed a double swing bridge with unsymmetrical leaves in northern Michigan. We understand that this bridge is still in operation.

In 1939 the District Engineer, U. S. Engineer Corps, Norfolk, Virginia, constructed a double swing highway bridge at Coinjock, North Carolina, across the inland waterway which connects Currituck and Albermarle sounds. In 1941 a duplicate of this structure was constructed by the U. S. Engineer Corps across the inland waterway at Great Bridge, Virginia. These two structures were designed by J. E. Greiner Company, Consulting Engineers, Baltimore, Md., under the supervision of the writer.

The February, 1941, issue of Civil Engineering contains an article by the writer describing in detail the various features of the Coinjock Bridge. In this article there is also presented an outline of the engineering report which formed the basis for selecting a double swing bridge for this site as compared with other types of moveable spans.

J. K. Knoerle
J. E. Greiner Company
Baltimore, Md.

Advance Planning

Sir: I was pleased indeed to see the splendid editorial on Advance Planning in your issue of Sept. 15. You have been most gracious in your compliment to the WSPE and yet have challenged us to further action in the advance planning field. I am sure that your editorial will be the basis for thoughtful and constructive discussion at our next board meeting scheduled for Milwaukee on October 8.

Herbert Moore
President
Wisconsin Society of Professional Engineers

Elastic vs. Plastic Theory

Sir: The article on design of concrete beams by Professor Boguslavsky (ENR May 5, p. 16) and the discussion following interestingly portray the contradictions resulting from applying an elastic theory to a plastic material.

A rational method of design is outlined in the Portland Cement Association's publication R/C #11, based on a paper by Vernon P. Jensen. He shows that, for the stresses assumed in Professor Boguslavsky's example, adding any compression steel in a beam before the amount of tension steel reaches $p = 0.039$, is meaningless.

If we accept this hypothesis—and the agreement of many test results make it fairly conclusive—it follows that the factor 2 in the present ACI Code now allows designs using compression steel in concrete beams to waste only half the amount of steel as heretofore.

Despite the nostalgic attachment that some of us may have for the simplicity and familiarity of the transformed section and the modular ratio, these devices should be abandoned if increasing numbers of tests should prove beyond doubt that they are in conflict with the true behavior of reinforced concrete beams.

David Bloom
Consulting Engineer
Philadelphia, Pa.

Fast Concreting

Sir: In your very descriptive article on the construction of the office building at 100 Park Avenue (ENR Oct. 13, p. 32), you state that "concreting kept pace with the steelwork and at all times was well within the distance limit (8 stories below steel being erected) prescribed by the state labor code."

Scrutiny of your excellent photograph on p. 32 will show that the form work is two floors below the floor on which the guy derricks are resting. We, at all times during the progress of the construction, kept "very well" within the eight story limit which you mention in your article.

Robert Silver
Vice President
Rizzi Construction Co., Inc.
New York 17, N. Y.

Track Relocation

Sir: Our engineers have called to our attention a couple of erroneous figures appearing in "Worth a Million Dollars to Shorten Rail Line 30 ft." on page 41 of your September 29 issue.

The relocated section is 5,390 feet long, not 5,930 as stated; our main line is shortened 301 feet by the project, not 30 as stated in the headline and article. You might want to mention that another result is a 207-degree reduction in curvature.

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H. R. Wiecking
Public Relations Assistant
Great Northern Railway

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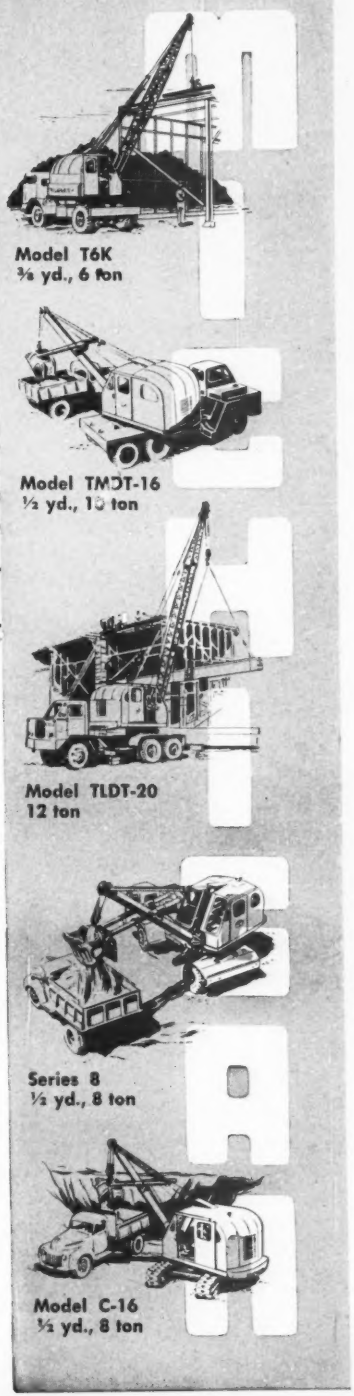

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